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United States
Department of
Agriculture

Forest Service
Flathead
National Forest

Environmental Impact Statement
Vol I

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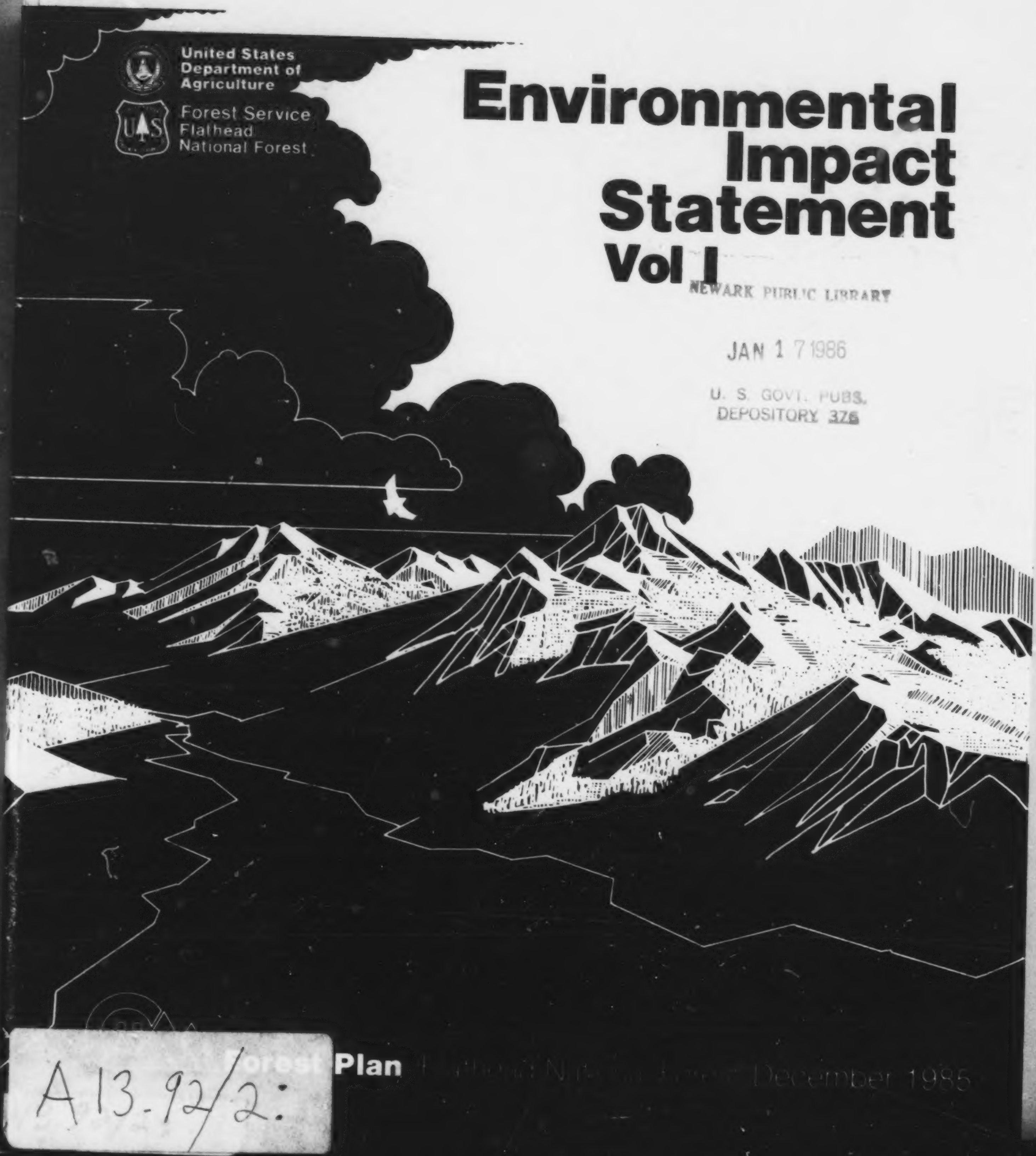

Forest Plan Flathead National Forest December 1985

A13.92/2:

ENVIRONMENTAL IMPACT STATEMENT

On The
Flathead National Forest
Land and Resource Management Plan

Type of Action	Administrative
Responsible Federal Agency	Forest Service, USDA
Responsible Official	James C. Overbay, Regional Forester Northern Region USDA - Forest Service Federal Building Missoula, MT 59725
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Abstract

This Environmental Impact Statement describes the Preferred Alternative and other alternatives, including a "no action" alternative, for managing the land and resources of the Flathead National Forest. The land area involved is 2,330,327 acres in Flathead, Lake, Missoula Lincoln, Powell, and Lewis and Clark counties, Montana.

The alternatives provide different mixes of managment resulting in different levels of goods and services. The environmental consequences for the Preferred Alternative and other alternatives are displayed.

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SUMMARY OF ENVIRONMENTAL IMPACT STATEMENT

A. PURPOSE AND NEED

This EIS (Environmental Impact Statement) documents the analysis and discloses the significant environmental effects of a Proposed Action (Preferred Alternative) and other alternatives for the future management of land and resources of the Flathead National Forest. The Preferred Alternative is the basis for the Forest Land and Resource Management Plan (Forest Plan) which is described in a separate document. The Forest Plan will guide management of the Forest for the next 10 to 15 years unless conditions or demands significantly change. The analysis in the EIS projects outputs and effects for up to 150 years to indicate the long-term implications of continuing with the Plan. While long range effects have been estimated, the Plan is only valid until it is revised, committing the Forest to a course of action no longer than 15 years.

Development of this EIS and Forest Plan followed direction from the RPA (Forest and Rangeland Renewable Resources Planning Act of 1974), and the NFMA (National Forest Management Act of 1976), and the NEPA (National Environmental Policy Act of 1969). Further direction was given by the implementing regulations of NFMA (36 CFR 219) and NEPA (40 CFR 1500-1508). The analysis in the EIS and Forest Plan are designed to ensure multiple use and provide a sustained yield of goods and services from the Forest to maximize long-term net public benefits and address public issues in an environmentally sound manner.

To determine the scope of the Proposed Forest Plan and EIS, issues and concerns were identified from comments solicited through public meetings, individual and group contacts, as well as from Forest Service personnel. The comments were analyzed and summarized into issues and concerns which provided the basis for the development and evaluation of alternatives. Following publication of the Proposed Forest Plan and Draft EIS documents, open houses and meetings were held with interested groups and citizens, along with other public contacts made in an effort to inform the public about the Forest Plan. The final issues are listed below:

Recreation -- To what extent and where should the Flathead National Forest be managed for specific types of recreational activities?

Roadless -- Which roadless areas or parts of roadless areas should be recommended for wilderness?
-- How should the areas not recommended for wilderness be managed?

Wilderness -- At what level should the Flathead National Forest manage the wilderness resource, including trail maintenance and fire management?

Visual Quality -- What are the visual management objectives for viewing areas within the Flathead National Forest?

Wildlife and Fish -- How much and what type of habitat should the Flathead National Forest provide for diverse fish and wildlife species, including those classified under the Endangered Species Act?

Range -- What level of forage production can be used by domestic livestock, while protecting other Flathead National Forest resource values?

Timber -- What should the sustained yield timber harvest level for the Flathead National Forest be, recognizing basic land productivity, economics, community stability, and other resource needs?
-- What timber harvest, silvicultural, and reforestation methods should be used on the Flathead National Forest considering economics, energy, and ecological requirements?
-- What utilization standards should the Flathead National Forest require in order to achieve optimum utilization of all wood fiber?
-- How much access and availability of fuelwood for domestic and future commercial use should the Flathead National Forest provide?

Water -- To what extent can the Flathead National Forest coordinate management activities on National Forest lands with adjacent private lands to protect and maintain the quantity and quality of the water resource?

Minerals -- Where, how much, and under what conditions should the Flathead National Forest provide for oil and gas exploration and development?

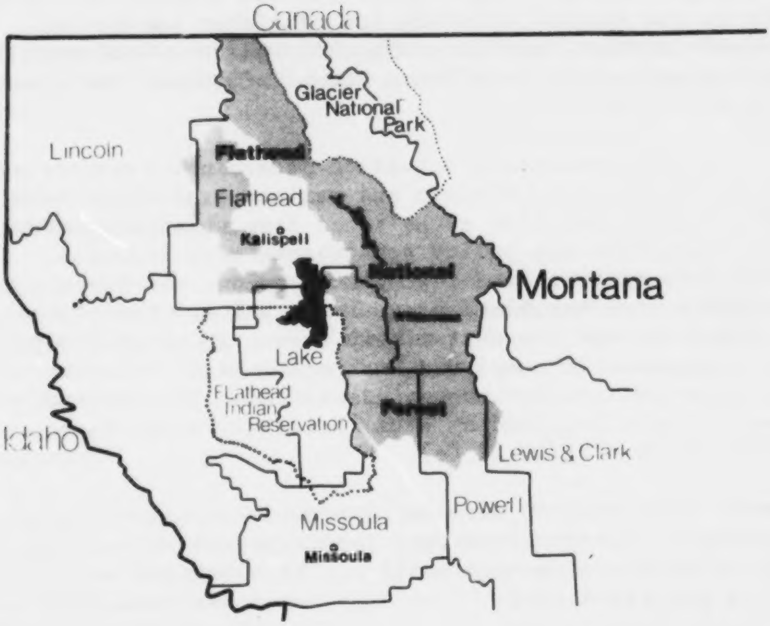
Lands -- To what extent should the Flathead National Forest adjust and consolidate landownership in order to support resource management and improve management efficiency?
-- How should the Flathead National Forest deal with the impacts created by the activities on private land inholdings?

Soils -- What level of management activities should take place on the Flathead National Forest while protecting the soil resource?

Roads -- How shall Flathead National Forest roads be constructed, managed, and maintained to best meet resource needs within sound environmental, economic, and social considerations?

Protection -- What fire management activities are appropriate on different areas of the Flathead National Forest?
-- How should the Flathead National Forest prevent or mitigate insect and disease damage to resource and economic values?

PLANNING AREA


Canada
Glacier National Park
Lincoln
Flathead
Flathead
Kalispell
National
Montana
Lake
FLathead Indian Reservation
Forest
Idaho
Lewis & Clark
Powell
Missoula
Missoula

The Flathead National Forest occupies over 2.3 million acres in the northwestern part of Montana. The Canada/United States border forms the northern boundary. Approximately 130 miles of boundary are shared with Glacier National Park to the east. The Flathead Indian Reservation lies at the southern end of the Forest. Three National Forests comprise much of the remainder of the Forest's boundaries--the Lewis and Clark National Forest to the east, the Lolo National Forest to the south, and the Kootenai National Forest to the west.

B. ALTERNATIVES, INCLUDING THE PREFERRED ALTERNATIVE

Forest planning began by identifying these public issues and management concerns. Refer to Appendix A for a complete description of this process. Once the issues were known, information was needed to determine the Forest's capability to respond to each issue. This step involved the analysis of the management situation and resource data. Economics information and environmental/legal constraints were examined. Benchmarks were developed and analyzed to measure resource and economic interrelationships and output ranges for alternative development.

Alternatives were developed that respond to the issues. Each alternative is evaluated as to how well it maximizes net public benefits, which include both priced and nonpriced benefits and costs. The consideration of all costs and benefits is called "net public benefits" and represents the overall value to the Nation of all benefits, less all costs, regardless of whether costs and benefits are expressed in priced or nonpriced terms. Alternatives were formulated to examine the tradeoffs between these priced and nonpriced public benefits, such as reduced present net value due to constraints on the spacial distribution of timber harvesting. Evaluation of these tradeoffs enables decision makers to select a Preferred Alternative that maximizes net public benefits. The alternative development process is outlined in 36 CFR 219.12.

The analysis of the management situation determined resource supply potentials by establishing minimum and maximum production levels called benchmarks. A level was also established from which the costs and effects of applying regulation and policy constraints were measured. Production capabilities were determined for single resources and for a set of multiple resource outputs that maximized present net value. The current level of goods and services, and the most likely amount to be provided in the future if current management is continued, was examined in relation to public issues and opportunities for change identified. This analysis established the benchmark levels required by NFMA (National Forest Management Act of 1976) regulation 36 CFR 219.12 (e).

The benchmarks were used to develop alternatives that represent a range of resource outputs. Alternatives were then designed to span the benchmark range while meeting policy constraints. The benchmark analysis also aided in addressing the broad range of public issues and management concerns.

The range of alternatives goes from emphasizing resources that are priced and have market outputs to emphasizing nonpriced, nonmarket outputs.

The RPA targets identified in the Northern Regional Guide were met in at lease one alternative. An alternative which emphasized market opportunities and one which emphasized nonmarket or amenity values was developed.

The roadless area evaluation principles (Peterson, May 13, 1983) were also followed to develop a range of roadless designations between all wilderness and all nonwilderness. Each roadless area was designated as wilderness in at least one alternative. One alternative designates most of the roadless area as wilderness and evaluates the opportunity for increasing commodity outputs on roaded lands.

All of the alternatives were tested against the benchmark capacities in order to determine if a wide range had been provided to respond to major issues.

The EIS discusses management alternatives that respond to the issues. Each alternative has a different management emphasis and provides a mix of resource outputs. Some alternatives, including those which determine maximum levels of production, were eliminated from detailed study because they only addressed single issues.

The alternatives considered, including the Preferred Alternative, were formulated through application of different combinations of management area direction. Each alternative considered in detail incorporates a common set of management standards and guidelines to ensure true "multiple use" management as well as protection of environmental quality. Each one represents a technically and legally feasible system of management for the Flathead National Forest. They address the planning questions derived from the scoping process and take into consideration anticipated demand for resources.

The following pages summarize the management emphasis and tradeoffs for each alternative (refer to Table II-18 in Chapter II of the main text for output summary tables):

ALTERNATIVE 1

Management Emphasis

This alternative emphasizes maintenance and enhancement of prime grizzly bear habitat, existing roadless areas, nongame wildlife, old-growth habitat, and fisheries. Production of commodity resources such as timber and oil and gas is constrained by consideration of impacts on other resources.

Tradeoffs

Big-game management opportunities are restricted by other resource management objectives; therefore, potential wintering populations are fourth lowest of all the alternatives by the fifth decade. Similarly, nonwilderness permitted livestock grazing is reduced by other resource considerations to the lowest level of all the alternatives.

Grizzly bear habitat management objectives preclude achieving correct cover/forage relationships and high forage production on the potential elk and mule deer winter range on the Spotted Bear Ranger District. Amenity resource management objectives elsewhere on the Forest limit management opportunities on whitetailed deer winter range.

This alternative would provide a high level of management emphasis focused on nongame species.

There is a large tradeoff in PNV (Present Net Value) because Alternative 1 has low timber harvest levels, more timber harvest scheduling and recreation constraints compared to the other alternatives and the PNV Benchmark.

ALTERNATIVE 2

Management Emphasis

This alternative focuses on the active use of National Forest lands and on resource development. It provides for high levels of commodity extraction tempered by concern for other resources. In this alternative, there would be fewest restrictions on people's use of the Forest.

Tradeoffs

Increased motorized access to the Forest lands would increase the variety of roaded settings. Existing relationships to the Forest would change as unroaded areas are accessed for timber production, and the natural-appearing landscape is modified.

Water quality throughout the Forest would be at relatively high risk under Alternative 2.

Some highly productive grizzly bear habitat would be roaded and managed for timber production. Roading these areas, while not lowering the population, would lower the quality of the habitat. High levels of access would decrease the population's security from human disturbance.

ALTERNATIVE 3

Management Emphasis

This alternative focuses on the Flathead National Forest's dual role of responding to local and National needs for recreation and timber. Timber is supplied at historic levels. Recreation is managed intensively and big game is emphasized to accommodate recreational hunting.

Tradeoffs

This alternative meets more of the inventoried potential visual quality objectives than any other alternative. About 89 percent of the Forest's potential visual quality objectives would be met; the highest of all the alternatives. Timber management is more costly due to these objectives.

Priced benefits, primarily in timber values, are traded off in return for nonpriced public benefits in recreation, nongame wildlife, threatened and endangered species habitat, and visual quality.

ALTERNATIVE 4

Management Emphasis

This alternative provides a high level of revenue to the Federal Treasury while maintaining the lowest level of costs possible. Commodity resources are emphasized. Their management is guided primarily by economic criteria. Management for goods and services that do not produce revenue would be minimal and limited to areas where existing use of the Forest is high.

Tradeoffs

Alternative 4 has the lowest noncash benefits of all alternatives due to the emphasis on cash receipts. This alternative is the most productive of commodity benefits per dollar spent of all the alternatives.

Economic stability under Alternative 4 would be significantly and adversely impacted by low timber harvest volumes and low recreation opportunities. Losses in employment opportunities would be higher than under any other alternative.

This alternative does not highlight recreation opportunities because recreation contributes few revenues to the Federal Treasury.

Alternative 4 would alter big-game hunting quality from the existing situation. Potential populations, particularly of whitetailed deer, would be low relative to other alternatives. Revenue maximizing management objectives preclude any significant investment in winter range management.

The timber harvest and roads would impact most productive grizzly bear habitat. Minimum management on a high proportion of the Forest would not allow for any habitat improvement or security measures.

ALTERNATIVE 5

Management Emphasis

This alternative emphasizes protective management in some areas of the Forest where roadless and/or wildlife values are believed to be highly significant. The Swan Mountain Range, the Le Beau area of the Tally Lake Ranger District, and the roadless portions of the north end of the Glacier View and Spotted Bear Ranger Districts would be managed for roadless recreation, watershed protection, wildlife, and other amenity values. In other areas, timber management would be emphasized. No additions to the existing National Wilderness Preservation System would be made at this time, but future options would be preserved.

Tradeoffs

This alternative has a high level of constraints on the production of commodity outputs due to the emphasis of roadless resource values and other nonpriced benefits. The suitable timber base is restricted to the high productivity site which are currently roaded or partially roaded. The tradeoff of priced timber benefits is of a magnitude to reduce PNV even through costs are low for Alternative 5.

Alternative 5 would adversely effect local economic stability. Employment and income provided by the wood products industry would be reduced.

ALTERNATIVE 6

Management Emphasis

This alternative manages commodity resources as intensively as legally possible. Noncommodity resources such as recreation are managed so as not to conflict with commodity outputs.

This alternative meets the direction in the President's "Statement of Policy" which states that "at least one alternative in the DEIS will be developed to determine how the 1980 RPA (Forest and Rangeland Renewable Resources Planning Act) program could best be implemented on the Forest. National demand for Forest resources are reflected in the RPA output objectives assigned to the Forest through the Northern Regional Guide."

Tradeoffs

Timber levels are the highest of any of the alternatives. This alternative has the third highest discounted costs. Achieving a high level of commodity development required a high level of funding in timber and road activities. Under Alternative 6, suitable lands would be accessed beycnd the economically optimal amount in order to achieve high timber output objectives resulting in a tradeoff of PNV.

Tradeoffs to achieve this high level of priced benefits include big-game winter rnage, fisheries, visual quality, and roadless recreation quality as well as PNV, resulting from increased costs.

ALTERNATIVE 7

Management Emphasis

This alternative emphasizes current management direction as it is defined by the Ranger District Multiple-Use Plans and the Unit Plan developed for portins of the Forest. This alternative represents the "no action" alternative.

Tradeoffs

Logging, timber, and road costs are high for this alternative in order to support timber harvest objectives above the economically optimal amount. The high timber output and heavy investment in timber management results in a tradeoff of PNV. This results in adverse impacts on nonpriced resources, and lower logging and management costs than other alternatives.

A tradeoff in the quality of big-game hunting would occur over time. The high level of roading needed for management would be located throughout the Forest providing relatively unrestricted motorized access.

Although Current Direction meets a relatively high percentage of the Forest's potential visual quality objectives at a cost to PNV, the management objectives and land designations do not assure that the visual quality of highly critical public issue areas such as Noisy Face are protected. The visual quality of the Forest would be modified.

Current Direction generally would tradeoff nongame species habitats in favor of higher priced benefits. The acres contributing old-growth habitat would be low. No areas would be managed specifically to improve or maintain nongame species habitat.

ALTERNATIVE 8

Management Emphasis

Initial Preferred Alternative in DEIS. This alternative represents the Flathead National Forest's view of a balanced management approach developed from evaluation of the first seven alternatives. In recognition of the growing recreational industry, the alternative provides a high level of nonpriced resources while also providing a level of timber harvest consistent with recent harvest levels.

Tradeoffs

Timber harvest is constrained by grizzly bear habitat management objectives, visual quality objectives, big-game winter range, and riparian management. These acres have constraints on economically optimal timber harvest considerably higher than the PNV Benchmark and results in a tradeoff of PNV.

ALTERNATIVE 9

Management Emphasis

This alternative has resource objectives designed to maximize the wilderness resource, and to provide the greatest amount of revenue for the least cost on nonwilderness lands. Commodity resources management is guided primarily by economic criteria. Management for resources that do not produce priced benefits outside wilderness is minimal. All 495,000 acres of inventoried roadless lands are recommended for wilderness designation.

Tradeoffs

Alternative 9 has the lowest discounted costs of all the alternatives. With all roadless lands designated as wilderness, capital investment is low and multiple-use management costs for nonpriced benefits such as wildlife and fish habitat improvement, water quality, and recreation opportunities are minimized. The remaining land is managed as cost efficiently as possible for timber and other priced commodities. Noncash benefits are among the lowest of all alternatives due to the reduced recreational capacity.

Primitive recreation settings, both of high and low quality, would be maximized at the expense of existing semiprimitive motorized and semiprimitive nonmotorized settings.

Little active management for wildlife habitat of any species would be provided.

Local resident access to the Forest would be the lowest of any alternative, as would firewood gathering opportunities.

ALTERNATIVE 10

Management Emphasis

Alternative 10 is identical to Alternative 5, except that 197,000 acres are recommended for wilderness.

Wilderness is recommended for pristine roadless areas where wilderness attributes are high and widely recognized. Timber production and resource extraction are concentrated in other portions of the Forest because of the importance of the timber industry in the local economy.

Tradeoffs

Under Alternative 10, nongame species habitat would be emphasized more than under other alternatives due to the protection of large roadless areas and management of riparian areas for wildlife. Alternative 10 would have the lowest potential for maintaining varied plant communities. The alternative has the third lowest number of acres in the suitable timber land base. Land designations which do not allow timber harvest would provide limited opportunities for the use of fire. Much of the Forest would advance to the later plant successional stages.

ALTERNATIVE 11

Management Emphasis

Identical to Alternative 8, except that it recommends 48,800 acres for wilderness designation. This was the Flathead National Forest's Preferred Alternative in the DEIS Supplement.

Alternative 11 would provide a level of timber harvest to local mills that is consistent with recent harvest levels while at the same time responding to the growing recreational use of the Flathead area.

Tradeoffs

The tradeoff in PNV is a combination of nonpriced public benefits in the areas of community stability and local lifestyles, dispersed recreation quality and diversity, threatened and endangered species habitat, and plant community diversity.

Moderate increases in access would occur as the roads needed for management are constructed. Restrictions on motorized access, however, would be imposed to meet management objectives.

ALTERNATIVES 12 - 15

Management Emphasis

Each of these alternatives recommends an increasing amount of wilderness:

- Alternative 12 recommends 82,400 acres in the Swan Front.
- Alternative 13 recommends 143,200 acres in the Swan Front and Swan Crest.
- Alternative 14 recommends 196,600 acres in the Swan Front, Swan Crest, and North End.
- Alternative 15 recommends 260,200 acres in the Swan Front, Swan Crest, North End, Young-Nasukoin, Spotted Bear River, and South Fork Flathead River.

In Alternatives 12 through 15, all nonwilderness lands are managed identical to Alternative 8.

Alternative 14 has an additional objective of adding a significant amount of wilderness while maintaining or increasing commodity and other outputs on the nonwilderness portion of the Forest.

Tradeoffs

Under these alternatives, PNV decreases because constraints are used which schedule harvesting on steep slopes in early decades. The nonpriced benefits of such constraints are: better diversity and distribution of wildlife habitat and vegetation, improved visual and recreation quality, reduced risk of adverse water quality effects, and better opportunity to distribute harvests in regenerated stands. In addition to increased costs for multiple-use objectives such as recreation, visual quality, and wildlife habitat, constraints on economic harvest of timber are necessary for their achievement, and this decreases PNV.

ALTERNATIVE 16

Management Emphasis

This alternative is identical to Alternative 1 except that it recommends 374,000 acres (75 percent of inventoried roadless acreage) for wilderness. It emphasizes management of prime grizzly bear habitat in nonwilderness areas through access restrictions, prescribed burning, and some carefully designated timber harvest to maintain the best relationship of cover to forage.

Tradeoffs

Alternative 16 has the second lowest discounted costs. This low level of investment resulted in the lowest discounted benefits, thus giving Alternative 16 the lowest PNV of all the alternatives. Priced benefits are traded off for nonpriced benefits primarily in nonrecreation wilderness values and threatened and endangered species habitat. Noncash priced benefits are also low.

Big-game populations are of concern in this alternative; however, opportunities to manipulate the vegetation to achieve the desired cover/forage ratio are limited by conflicts in some areas with management of grizzly bear habitat and with wilderness designations. Thus, the Forest's potential to support big-game populations is reduced.

Commodity resource development is not highlighted in this alternative.

ALTERNATIVE 17

Management Emphasis

Preferred Alternative in final EIS. Management emphasis is similar to Alternatives 8 and 11 except that the wilderness recommendation has been increased to 98,080 acres. Wildlife habitat emphasis has been increased and visual quality, in noncritical areas, has been reduced. Alternative 17 represents the Flathead National Forest's view of a balanced management strategy for the future. This alternative includes many changes due to public involvement.

Tradeoffs

Receipts from timber are constrained by more wildlife and visual quality constraints in Alternative 17 and this results in a tradeoff of PNV for nonpriced public benefits in the area of community stability. Alternative 17 is constrained to harvest more acres of lodgepole pine than scheduled by other alternatives and the PNV Benchmark due to predicted losses of merchantable volume due to mountain pine beetle. This results in a tradeoff of PNV because more profit can be made logging more valuable mixed species of trees on gentle slopes.

Some visual quality nonpriced benefits were traded off in favor of big-game winter range and priced cash benefits in Alternative 17 after considering public comments on the Draft.

C. AFFECTED ENVIRONMENT

The Flathead National Forest is located in northwestern Montana in the Rocky Mountain Province. All of the major landforms are structurally controlled with most of the mountain ranges being formed by block faults. The western-most range is folded and faulted. Glaciation from the last ice age influenced the shape of the land as well as the composition of the soil. The weather is cool and maritime influenced.

The existing vegetation shows the influence of fire. Extensive stands of lodgepole pine are most prevalent over the northern half of the Forest. Many of these stands are highly susceptible to infestations of mountain pine beetle. Fire's influence further manifests itself in vegetative mosaics, affecting species composition, age class, and life form.

Over 270,000 acres of State of Montana and private land are within the Flathead National Forest boundary. These include checkerboard sections of Plum Creek Timber Company, Inc., Glacier Park Company lands (primarily in the southern portion of the Forest), two State forests, State lands, and scattered small private tracts.

About 40 percent of the Forest outside wilderness is adjacent to or readily visible from major highways or roads, recreational routes and use areas, or residential private land; and thus very sensitive to management activities which disturb the natural landscape.

While the Forest provides resources to the Region and to the Nation, the local zone of influence includes three western counties - Flathead, Lake, and Missoula. This zone of influence encompasses those people who depend on the Forest resources and who use it on a regular basis. Approximately 140,000 people live in this area. Major communities include Kalispell, Columbia Falls, Whitefish, Polson, and Missoula. Wood products, manufacturing, tourism, Government, and to lesser extents, agriculture and the railroad are the areas of economic activity that have historically been the major determinants of growth for the area.

The majority of the residents in the three county area believe that the natural environment contributes significantly to the quality of life in the area, and the Flathead National Forest, through its management objectives and activities, has a high potential for affecting the quality of this environment. Forest receipts come primarily from the sale of timber, but also from grazing permits, mineral leases, special-use permits, and campground fees. A major way that forest management affects the local community is through its impact on employment. The Forest influences the wood products, Government, construction, and recreation service sectors. Indirect impacts are produced as those sectors transact additional business with other sectors.

1. RECREATION

The Flathead National Forest is an integral part of the local area's recreational environment, which also includes Glacier National Park, the Flathead River System, Flathead Lake, and the Big Mountain Winter Sports Area. Because of these attractions, the Flathead zone of influence has become an important destination recreation site for Americans and Canadians. In addition, the growing local population places user pressure on the area's recreational settings.

In 1980, the largest portion of the Forest's use occurred in the dispersed Forest areas (54 percent), while 31 percent of the use was at developed recreation sites, and 15 percent occurred in the wildernesses.

Access in the Forest is provided by 2,146 miles of trails, with 1,244 miles in wilderness and 902 miles outside wilderness. There are nine National Recreation Trails and part of the Continental Divide Scenic Trail on the Forest.

2. WILDERNESS, ROADLESS, AND SPECIAL AREAS

Specially designated areas of Flathead National Forest contribute substantial recreation opportunities. The Flathead National Forest administers all of the Mission Mountains and Great Bear Wildernesses and about 70 percent of the Bob Marshall Wilderness. These areas comprise about 5 percent of the National Wilderness Preservation System in the lower 48 States and about 46 percent of the Forest's land base.

The three forks of the Flathead River classified under the Wild and Scenic River Act consist of two wild segments, three recreational segments, and one scenic segment, totaling 219 miles of classified river.

Jewel Basin was classified by the Regional Forester as a Special Roadless Area in 1970. The 15,000 acres have been managed to provide roadless backcountry hiking opportunities.

The Big Mountain Winter Sports Area currently ranks first in skier visits of all ski areas in the Northern Region of the Forest Service.

The Forest has approximately 495,000 acres of inventoried roadless lands that qualify for inclusion into the National Wilderness Preservation System. They provide the potential for meeting some of the National, Regional, and Forest wilderness need because of the opportunity for solitude, primitive recreation, natural integrity, and outstanding scenery and appearance. They also contain ecological and other features of particular scientific and scenic value, within a relatively intact ecosystem.

3. CULTURAL RESOURCES

Known cultural resources on the Flathead National Forest are diverse and represent human occupation of the area for at least 5,000 years.

In 1976, the Flathead National Forest began conducting inventories for cultural resources that might be adversely affected by management activities in compliance with existing Federal legislation.

4. VISUAL QUALITY

The scenic environment throughout the Flathead National Forest is diverse. As viewed from critical viewpoints, much of the Forest maintains a natural or near natural appearance. Portions of the Forest shows signs of modification by people. The majority of the modifications that do occur are due to timber harvest and road construction activities.

Of the visually sensitive acres, critical areas have been identified. These are visually sensitive areas which are most frequently seen by area residents and visitors.

5. FISH AND WILDLIFE

The Flathead National Forest provides habitat for approximately 250 species of wildlife and 22 species of fish. National Forest management of wildlife and fish populations is oriented toward protection and improvement of fish and wildlife habitat.

"Indicator Species" have been identified for those species groups whose habitat is most likely to be changed by Forest management activities.

a. Fish

There are approximately 3,400 miles of streams on the Forest, about half of which support fish populations. About 600 miles of these streams with viable fish populations are located in the wildernesses, with 1,100 miles of stream fisheries occurring throughout the remainder of the Forest. The streams generally have low to moderate levels of productivity, averaging about 100 6-inch trout per mile. Native fish species include bull trout, cutthroat trout, mountain whitefish, and several nongame species. Introduced species include rainbow and brook trout, arctic grayling, kokanee salmon, and northern pike.

Most trout populations in the lakes and rivers of the Flathead River drainage are dependent on tributary streams for spawning and rearing.

Kokanee salmon from Flathead Lake use tributary streams for spawning, but most sites are not on Flathead National Forest lands. The salmon do, however, depend on high quality water provided in part by the Forest.

b. Big Game

Flathead National Forest provides habitat for eight commonly hunted big-game species - elk, mule deer, whitetailed deer, moose, Rocky Mountain goat, grizzly bear, black bear, and cougar.

c. Threatened and Endangered Species

Flathead National Forest lands provide habitat for three endangered species: the gray wolf, bald eagle, and peregrine falcon; and one threatened species, the grizzly bear. The woodland caribou, presently identified as a sensitive species in Montana may also be extant.

Most of the Flathead National Forest is considered essential grizzly bear habitat in the Grizzly Bear Recovery Plan prepared by the U.S. Fish and Wildlife Service.

The Grizzly Bear Recovery Plan identifies a target recovered grizzly bear population in the Bob Marshall Ecosystem. The Flathead National Forest is responsible for a portion of this population. This means the Forest would need to provide the habitat components necessary to potentially support 207 bears. A high level of road restrictions and habitat improvement will be necessary to attain this population level.

6. RIPARIAN AREAS

Riparian areas on the Forest include perennial streams, lakes, and reservoirs with their associated floodplains, vegetation, and wetlands. Wetlands include swamps, marshes, bogs, sloughs, potholes, wet meadows, river overflows, mudflats, and natural ponds. The Forest has about 56,000 acres of riparian area outside of wilderness and Flathead Wild and Scenic River areas.

7. RANGE

The Flathead National Forest contains very little permanent rangeland. Soil and climatic conditions quickly advance the successional stages of vegetative development toward tree establishment which restricts or eliminates grazable forage.

a. Nonwilderness

Swan Lake and Tally Lake Ranger Districts provide nearly all of the domestic livestock grazing opportunities on nonwilderness lands. Generally, National Forest System land is an integral part of a much larger grazing unit involving State and private lands.

b. Wilderness

Wilderness forage is grazed by recreationists' stock, Government administrative stock, and wildlife. No cattle or sheep use is permitted. The amount of forage considered available for transportation stock is constrained by criteria that are designed to protect the wilderness resource.

8. TIMBER

About 835,747 acres or 36 percent of the Flathead National Forest are tentatively suitable for producing commercial timber.

The existing mixture of timber on the Forest is composed of 18 percent lodgepole pine (tree stands with two-thirds or more of the volume lodgepole pine) and 82 percent mixed conifer stands. Since 1975, mountain pine beetle populations have been at epidemic levels, impacting most severely the lodgepole pine.

The age class distribution of the commercial Forest land is 34 percent high risk sawtimber (timber over 120 years old), 20 percent mature sawtimber (80 to 120 years old), 21 percent poles (40 to 80 years old), 14 percent seedling/sapling (1 to 40 years old), 5 percent stagnated stands, 4 percent uneven-aged stands, and 2 percent nonstocked. These stands are unevenly distributed across the Forest.

Historically, the majority of timber management activities have occurred on the less than 40 percent slopes.

In addition, mature timber stands are concentrated in certain drainages or portions of drainages which have not had a severe natural fire within the last century. These are the stands which have had the majority of timber harvest within the last 10 to 20 years.

9. VEGETATION

Flathead National Forest plant communities are naturally diverse (referring to the distribution and abundance of different plant and animal communities, across the Forest). Most of the major vegetative habitat types common to western Montana are located on significant acreages on the Forest.

Uncontrolled natural fire was the primary natural force establishing the even-aged vegetative communities of the Forest. These communities are made up of timber stands, each of a different age class. As an example, the fire history of the Flathead National Forest has resulted in relatively large areas vegetated by even-aged lodgepole pine stands. These stands resulted from fires which occurred around the turn of the century.

Natural and man-caused fire has been vigorously suppressed through the recent history of the Forest. Only in recent years have land managers recognized the benefits of natural fire; therefore, a program of natural fire management in the wildernesses is designed to allow fire to resume its natural role of regulating plant diversity. Throughout the remainder of the Forest, timber harvest and prescribed fire have become the major factors influencing the Forest's plant communities.

10. WATER

The Flathead National Forest provides approximately 7,000,000 acre-feet of water per year to the Columbia River. Five major stream systems feed the Flathead River drainage, which eventually flows into the Columbia system. The three forks of the Flathead River--the North Fork, South Fork, and Middle Fork--drain a major portion of the Forest. The Stillwater River, located on the western portion of the Forest, empties into the main stem of the Flathead River, a short distance above Flathead Lake. The Swan River flows north and empties into Flathead Lake, the largest natural freshwater lake west of the Mississippi. Hungry Horse Reservoir dams the lower end of the South Fork of the Flathead River and provides power, flood control, and late season downstream flows. A dam on the Swan River near its mouth provides for community power generation. The remainder of the major rivers and streams are free-flowing.

Of the six watersheds on Flathead National Forest that are public water supplies, four provide water to communities. Watersheds used by Essex, Columbia Falls, and Whitefish (Essex Creek, Cedar Creek, and Haskill Basin respectively) are managed according to FSM 2543.12 "Requirements for Municipal Watersheds." The remaining public water supply watersheds are managed with best management practices under the State water quality classification for the watershed.

11. RESEARCH NATURAL AREAS

The Northern Region RPA objectives assign 17 habitat and vegetative types to the Flathead National Forest to locate, evaluate, and recommend as RNA's (Research Natural Areas). There is one existing RNA on the Flathead, located in the Coram Experimental Forest (see Chapter IV for discussion of proposed RNA's by alternative).

12. MINERALS

The dominant mineral activity on the Forest is oil and gas leasing. A total of approximately 1,234,028 acres, outside wilderness, are either leased or under lease application.

Oil and gas exploration on the Flathead National Forest has been in the preliminary phases.

No other activity or interest has been expressed for other leasable minerals such as coal, phosphate, oil shale, or geothermal.

Hard rock mining and exploration is under the authority of the 1872 General Mining Law, which entitles the miner to do all reasonable and necessary activity to explore for and develop mineral resources. Forest Service control of these activities is through its surface mining regulations.

Currently there are 62 unpatented mining claims on the Flathead National Forest. There are no known active mining operations.

Common variety minerals, such as gravel and common rock deposits, are extensively utilized for State, County, and Forest Service road construction and maintenance.

12. LANDS

The 2,628,674-acre Flathead National Forest (gross area) contains 278,740 acres of non-National Forest ownership. Major owners of these inholdings are Plum Creek Timber Company, Inc., State of Montana (mostly school trust lands), and Champion International Corp. A major checkerboard landownership pattern exists in the upper Swan Valley with Plum Creek Timber Company, Inc., and the State of Montana. Widespread subdivision for recreational and rural residential use over the past decade has resulted in thousands of other small landownerships.

13. ROADS

As of January 1985, there are 3,941 miles of existing road on the Forest, including approximately 239 miles of arterial roads, 1,007 miles of collector roads and 2,695 miles of local roads.

14. PROTECTION

The Flathead National Forest's vegetation reflects the ongoing impacts of fire. Major fires have occurred every 3 to 10 years. The greatest number of acres were burned in 1910, 1926, and 1929, resulting in the existing acreages of lodgepole pine.

The Flathead National Forest averaged 53.8 fires from 1974-1983. Of these, 59.3 percent have been lightning caused and 40.7 percent caused by human activities.

In 1980, the number of timbered Flathead National Forest acres affected by the mountain pine beetle increased to about 315,000--a 260 percent increase since 1979.

Spruce bark beetle activity has been noted in three drainages of the North Fork of the Flathead River.

Other Forest insects and diseases are presently at endemic population levels and are manageable.

D. ENVIRONMENTAL CONSEQUENCES

The environmental consequences are described as quantitative or qualitative changes from the current situation in terms of significance, magnitude, and duration. The discussion identifies consequences that are direct, indirect, cumulative, or unavoidable. The relationship of short-term use of resources to long-term productivity is also discussed along with irreversible and irretrievable commitment of resources.

Wilderness

The maintenance of primitive recreation opportunities is maximized and maximum protection is given to fisheries, water quality, old-growth timber, and associated wildlife species. Threatened and endangered plant and animal species are protected, but little can be done to improve their habitats. Natural-appearing landscapes are preserved, although buildup of natural fuels may increase risks of wildfire.

Mineral exploration and timber harvest opportunities are foregone when suitable acres are classified as wilderness. That amount of timber volume is lost to mortality. Nine alternatives propose additional wilderness on the Forest.

Roadless Management

The proposed use of lands to provide for semiprimitive recreation has a measurable effect on long-term productivity. The timber productivity of resources is maintained but the opportunity to make the area more productive through intensive management is foregone. While nondevelopment maintains the opportunity for semiprimitive recreation, it is also important in the maintenance of old-growth timber and its associated wildlife habitat. Natural-appearing landscapes are preserved, although the opportunity for more intensive wildfires is increased by the build-up of fuels.

Dispersed Recreation

The short-term use (i.e., construction and maintenance) of trailhead facilities, toilets, hitchracks, stock ramps, and loading areas will have similar long-term effects on timber productivity as developed recreation sites. Although trails can be abandoned and the land's appearance may eventually approximate the original condition, this is not likely to happen as long as the demand for dispersed recreation remains high. These facilities and trails will tend to concentrate use in certain areas and along certain routes. Despite care and maintenance, minor soil erosion will occur. Mitigation is planned through site-specific closures and use restrictions set forth in the Forest Visitors Map.

Developed Recreation

The construction and management of developed recreation sites will enhance and compliment the public's overall recreation experiences. Sites would be committed to long-term use and programed for continuous recreation outputs. The effects of roading and use could be expected to be evident for a long period of time even if the sites were abandoned. Acreage committed to developed recreation would not be available for timber production.

To minimize impacts, users would have to comply with established rules and regulations. Sites would be modified, vegetation managed, and facilities introduced to minimize impacts to soil, water, vegetation, and habitat. Effects on other resources would be minimal.

Cultural Resources

The protection given to cultural resource sites will have some effect on long-term productivity. Even though cultural surveys will be made prior to ground-disturbing activities, these surveys may not always be successful in finding a cultural resource prior to the time the activities occur. Should this happen, the ground-disturbing activity will be delayed while the area is inventoried and evaluated. Analysis of the results of this inventory may show that the activity needs to be diverted away from the site or that the resource needs to be mitigated by standard archaeological methods before the activity proceeds. This can cause delay and if the area is to be completely protected, will affect the long-term productivity of the site.

Resource development oriented alternatives have a higher potential for impacting cultural sites than others.

Visual Resource

Visual quality objectives help to determine the degree of alteration acceptable in the Forest landscape. These objectives may constrain Forest management activities, especially timber management, depending upon the degree to which the Forest's landscape is to remain natural in appearance.

Under some alternatives, irretrievable commitments of resources in the short term occur to a greater extent than under others. For example, visual quality under Alternatives 2, 4, and 6 is primarily committed to modification of the natural-appearing landscape, foregoing opportunities to maintain retention or partial retention levels of visual quality. Under the Preferred Alternative, much more of the Forest would be retained or partially retained as natural appearing.

Threatended and Endangered Species

Any activity which causes a loss to a T & E species population, despite the mitigation measure taken to protect their habitat, is considered as an adverse effect to the continued existence of the species. The intent is to avoid all significant adverse situations on T & E species habitat that can be foreseen from all proposed management activities. There will be no significant adverse effects on watershed, soils, or basic ecosystem productivity from habitat management for threatened and endangered or sensitive (rare) species. Increased probability of bear-human confrontations may result if bear populations increase along with a continuation of the past trend of increasing human occupancy of bear habitat.

The T & E (Threatened and Endangered) species habitats which are given protection will have an effect on the timber and range resources within the areas. Since the commitment to protect these species is irreversible in the foreseeable future, the vegetation made unavailable for harvest represents an irretrievable loss.

Wildlife Habitat Improvement

Prescribed fire and timber harvest are the main activities conducted to maintain or increase the forage on big-game winter range.

Prescribed burning retains the vegetation in an early stage of plant succession. Productivity of grasses, forbs, and shrubs on winter ranges is reduced more rapidly when timber regeneration is accomplished through artificial planting. Continued browse burning reduces or eliminates the potential timber productivity of a site when it is suitable for timber production. The blackened areas from burning will create a visual nuisance for short periods of time, especially along frequently traveled roadways, but these visual effects will be rapidly reduced due to quick regrowth of vegetation.

Fish Habitat Improvement

Projects associated with increasing fish passage will permit fish to use stream segments which are presently unavailable. Habitat improvement work will increase existing stream habitat capacities and possibly productivity. Fish habitat will be maintained above existing levels in many areas.

Under all alternatives, timber management options in riparian areas will be limited to maintain both fisheries and wildlife habitat.

Protection - Fire Suppression

Fire suppression activities will respond to defined resource directions and requirements. In the short-term, activities will minimize damages to resources, such as timber, by providing protection. Reduction of fire treated acres may, in the long-term, affect the vegetative composition, distribution and thereby affect the fauna, aesthetics, hydrology, and susceptibility to Forest pests and fire.

Prescribed Fire

Prescribed fire is planned and used to bring about desired affects in the short and long term. Consequently, the land productivity will be maintained or enhanced in both short and long term. As an example, plant or animal diversity is maintained. Prescribed fire may burn out of prescription. In those cases, short-term effects may be undesirable. Fire suppressions actions will be taken to minimize those short- and long-term effects.

Range

Some streambank trampling cannot be avoided without very high investment in fences. Coliform counts are increased where manure is dropped into streams. Facilities and fences have an effect on the visual resource. Cattle may have either a positive or negative visual effect depending on the viewer. Some adverse effects will occur on fish habitat, recreation use, and water quality.

The grazing of livestock on the Forest will have little effect on long-term productivity.

Minerals

Exploration and development of mineral or oil and gas resources are likely to have short-term effects on productivity of site-specific areas. Development on a large scale would have a longer term effect on original productivity but the productivity of the mineral resource may be more beneficial than that which it replaces. Some disturbed sites are unlikely to be as productive as before disturbance.

There are no adverse effects associated with leasing; however, if exploration or development occurs, soil will be disturbed, erosion will occur and water quality may be lowered. Some visual resource may be lost. Mitigating measures will be applied under Federal regulations to reduce the intensity of the adverse effects.

Protection - Insect and Disease

The implementation of appropriate silvicultural methods to manage insect and disease problems increases the long-term productivity of the Forest for recoverable resources as opposed to no treatments.

Water yield increase due to extensive tree mortaility cannot be avoided.

Even with the most intensive insect and disease programs, some timber losses and associated reosurce impacts will continue to occur. Insect and diseases will continue to play a significant role in the Forest ecosystem.

Timber Harvest

Although long-term productivity is assured, some alternatives place more emphasis on short-term uses of resources, resulting in higher short-term adverse impacts on the environment.

Most timber harvest on the Forest will be done with even-age systems; shelterwood, seed tree, and clearcut methods will be used. Visual quality can be impacted by these systems, and water yields increased.

Uneven-age harvest systems such as single tree selection and group selection may be applied in riparian areas or areas with highly sensitive visual objectives.

Short-term reduced air quality from dust, smoke, and automobile emmissions would also result from timber management objectives.

Under all alternatives, timber in areas that are not economically accessible may represent an irretrievable commitment of resources since mortality is not salvageable. The commitment is irretrievable rather than irreversible because future technological advances could make harvest of this area possible and feasible.

Timber production under all alternatives increases over time; however, under some alternatives, harvest levels are constrained by water quality or economic efficiency considerations or wilderness designations. The harvest volume lost is irretrievable.

Road System

Construction of roads has a long-term effect on vegetative productivity. Even though efforts may be made to rehabilitate a road, the roadbed itself and the cut and fill slopes will not produce timber. If the roads remain active, this acreage is removed from the vegetative production capacity of the area. On the other hand, roads allow timber harvest and resource management which can have a positive effect on the future productivity of the overall area.

Roads remove the habitat of some small animals and birds even though the edge of roads may create habitat for others. Roads change the type of recreation experience available in the area. Actively traveled roads can have a deleterious effect on the movement of big-game animals. Roads can have an impact on the visual resource which is long lasting. Road construction contributes the most significant risk of adverse effects on water quality. Roads also continue to produce sediment after the initial construction. This background level of sediment can reduce the long-term productivity of the fishery and delay recovery of the habitat. Roading an unroaded area results in an irretrievable commitment of some of the roadless resource values.

Short-Term Use vs. Maintenance and Enhancement of Long-Term Productivity

The interactions between man's short-term uses of his environment and the maintenance and enhancement of long-term productivity are complex. short-term uses are generally those that occur annually on some part of the Forest, such as livestock grazing as a use of the forage resource, timber harvesting as a use of the timber resource, and recreation as a use of the wilderness and/or water resources.

Long-term productivity refers to the capability of the land to provide resources; for example, forage, timber, and high quality water. Soil and water are the primary factors of long-term productivity. Relationships between other resource management objectives and the soil and water resources represent the relationship between short-term uses and long-term productivity.

Under all alternatives, the long-term productivity of the National Forest land is protected. Forest-wide management standards were developed by the resource specialists and ID Team and approved by the Forest Supervisor. These provide the specific direction and mitigation measures to assure long-term productivity is not impaired by the application of short-term management practices. The Forest Plan displays these standards.

Although long-term productivity is assured, some alternatives place more emphasis on short-term uses of resources resulting in higher short-term adverse impacts on the environment. Alternative 2, 6, and 7 (Current Direction), with the highest timber harvest volumes and largest suitable land bases, would result in the most short-term adverse impacts of all the alternatives. Those impacts would include increased sedimentation and water yield, reduced air quality, and decreased hunting and fishing opportunities. Alternatives 1, 5, 10, and 16, with comparatively low levels of resource development, would have the lowest level of short-term environmental consequences.

Irreversible and Irretrievable Commitment of Resources

Irreversible commitment of resources refers to resources that are renewable only after a long period of time, such as soil productivity, or not renewable (such as minerals or cultural resources). Measures that protect those resources that could be irreversibly affected by other resource uses are incorporated in the Forest-wide management standards.

Irretrievable commitment of resources refers to resource production or the use of a renewable resource that is lost because of land designation and/or scheduling decisions. In other words, opportunities are foregone for the period of time that resource cannot be used. For example, timber in areas that are not economically accessible may represent an irretrievable commitment of resources since mortality is not salvageable. The commitment is irretrievable rather than irreversible because future technological advances could make harvest of this area possible and feasible. Two other examples of irretrievable commitment of resources are wilderness designation and visual quality objectives.

Irretrievable commitment of resources is also represented by the difference between alternatives' resource production levels and the higher levels that could be produced. For example, timber production under all alternatives increases over time; however, under some alternatives, harvest levels are constrained by water quality or economic efficiency considerations. The harvest volume lost is irretrievable.

Under some alternatives, irretrievable commitments of resources in the short term occur to a greater extent than under others. For example, visual quality under Alternatives 2, 4, 6, and 9 is primarily committed to modification of the natural-appearing landscape, foregoing opportunities to maintain retention or partial retention levels of visual quality. Under most other alternatives, including the Preferred Alternative, much more of the Forest would be retained or partially retained as natural appearing. The impacts of resource management objectives, land designations, and scheduling on the irretrievable commitment of resources is discussed resource-by-resource in Chapter IV of this document.

Adverse Effects Which Cannot Be Avoided

Implementation of any of the alternatives would result in some adverse environmental effects that cannot be avoided. The alternative formulation process, including development and analysis of benchmarks, ensured that alternatives which would have had major adverse environmental effects were eliminated. Although the application of Forest-wide standards is intended to limit the number and duration of these adverse effects, the following are associated to some extent with all alternatives:

-- increase in sedimentation resulting from soil disturbance and increased water yield associated with timber harvest activities.

-- reduced timber volumes due to other resource management objectives, including those for water quality, wildlife habitat, visual quality, wilderness, and roadless dispersed recreation.

-- reduced PNV due to resource management objectives which may not contribute to the PNV of the Forest, such as objectives for visual quality, water quality, wilderness, and wildlife habitat.

-- short-term reduced air quality, dust, smoke, and automobile emmissions resulting from increased recreational use and timber and wildlife habitat management objectives.

-- reduced roadless acres due to other management objectives.

E. CONSULTATION WITH OTHERS

The Forest Service has conducted an active public involvement program throughout the Forest planning process. Federal, State, and local government agencies have been informed and consulted. Individual Forest users and special-interest groups have also had an opportunity to actively participate.

In March 1983, a DEIS (Draft Environmental Impact Statement) and Proposed Forest Plan were released which included eight alternative ways to manage the Flathead National Forest. The alternatives were responsive to the issues identified at that time. A formal comment period extended from March 4 to August 10, 1983. The DEIS and Proposed Forest Plan Supplements were released in November 1984. The DEIS Supplement presented eight additional alternatives that included a wide range of proposed wilderness additions. The formal public comment period extended from November 16, 1984, to March 15, 1985. Comments received during this review period dealt with all 16 alternatives.

Approximately 800 copies of the DEIS and Proposed Forest Plan and their supplements were sent out to all requesting groups and citizens. These documents were reviewed at 19 public meetings held from 1983 through 1985. These same documents were also presented and reviewed at 80 meetings with special interest groups such as industry, trade groups, environmental groups, civic organizations, and user groups. Another 54 meetings were held with other Federal, State, and local Government agencies.

Written comments and input were received from:

	Letters
Government Agencies	30
Special Interest Groups	107
Personal Letters from Citizens	1,312
Form Letters from Citizens	1,560

All written comments were read, analyzed, and used in reaching the final decision in the Forest Plan. Even though the formal public comment period ended March 15, 1985, comments received up to March 31, 1985, were included in the statistical summaries of public comments. Comments received after March 31, 1985, were read and analyzed, but not included in the statistical summary of public comments. A specific response has been developed for each written input and this response is available to the commenter upon request. The Flathead National Forest has also offered to meet with any individual or group to review their input and the response to their input. More detailed information on public involvement is contained in Chapter VI, of the EIS.

I. Purpose and Need

INTRODUCTION

This EIS (Environmental Impact Statement) documents the analysis and discloses the significant environmental effects of a Proposed Action (Preferred Alternative) and other alternatives for the future management of land and resources of the Flathead National Forest. The preferred alternative is the basis for the Forest Land and Resource Management Plan (Forest Plan) which is described in a separate document. The Forest Plan will guide management of the Forest for the next 10 to 15 years unless conditions or demands significantly change. The analysis in the EIS projects outputs and effects for up to 150 years to indicate the long-term implications of continuing with the Plan. While long range effects have been estimated, the Plan is only valid until it is revised, committing the Forest to a course of action no longer than 15 years.

Development of this EIS and Forest Plan followed direction from the RPA (Forest and Rangeland Renewable Resources Planning Act of 1974), the NFMA (National Forest Management Act of 1976), and the NEPA (National Environmental Policy Act of 1969). Further direction was given by the implementing regulations of NFMA (36 CFR 219) and NEPA (40 CFR 1500-1508). The analysis in the EIS and Forest Plan are designed to ensure multiple use and provide a sustained yield of goods and services from the Forest to maximize long-term net public benefits and address public issues in an environmentally sound manner.

Subsequent projects that implement Forest Plan direction will be tiered to this EIS. Environmental analyses will incorporate by reference the general discussions in this EIS. Additional analyses will be done for projects not covered by this EIS.

NATIONAL, REGIONAL, AND FOREST PLANNING

The analysis and the resultant Forest Plan supersedes all previous land and resource management plans prepared by the Forest. They are a direct link to national and regional planning. The national program, required by RPA, sets national direction and output levels for National Forest System lands. These levels are based on suitability and capability information provided by Forest Service Regions. Each Region in a Regional Guide divides its share of the national production levels among the Forests. The Guide also delineates standards and guidelines for management within the Region. The share for each Forest is based on detailed information furnished by the Forest. Thus the Forest Plan includes direction provided by RPA, NFMA (including the implementing regulations), and the Northern Regional Guide.

The EIS results from the first seven of 10 planning actions required by NFMA (36 CFR 219). These seven planning actions are:

1. Identification of issues, concerns, and opportunities.
2. Development of planning criteria.
3. Inventory data and information collection.
4. Analysis of the management situation.
5. Formulation of alternatives.
6. Estimated effects of alternatives.
7. Evaluation of alternatives.

Refer to Appendices A and B for a detailed description of the process used in planning actions 1, 3, 4, 5, and 6.

Governmental agencies and the general public were asked to comment on the 1983 Draft EIS and Proposed Forest Plan and the 1984 Draft EIS and Proposed Forest Plan supplements. Comments received were used to examine the results of the first seven planning steps and to modify, where necessary, the Forest Plan.

The final EIS and Forest Plan will be used by the Regional Forester as the information base for a record of decision to complete the planning steps:

8. Selection of the preferred alternative.
9. Plan implementation.
10. Monitoring and evaluation.

PLANNING AREA

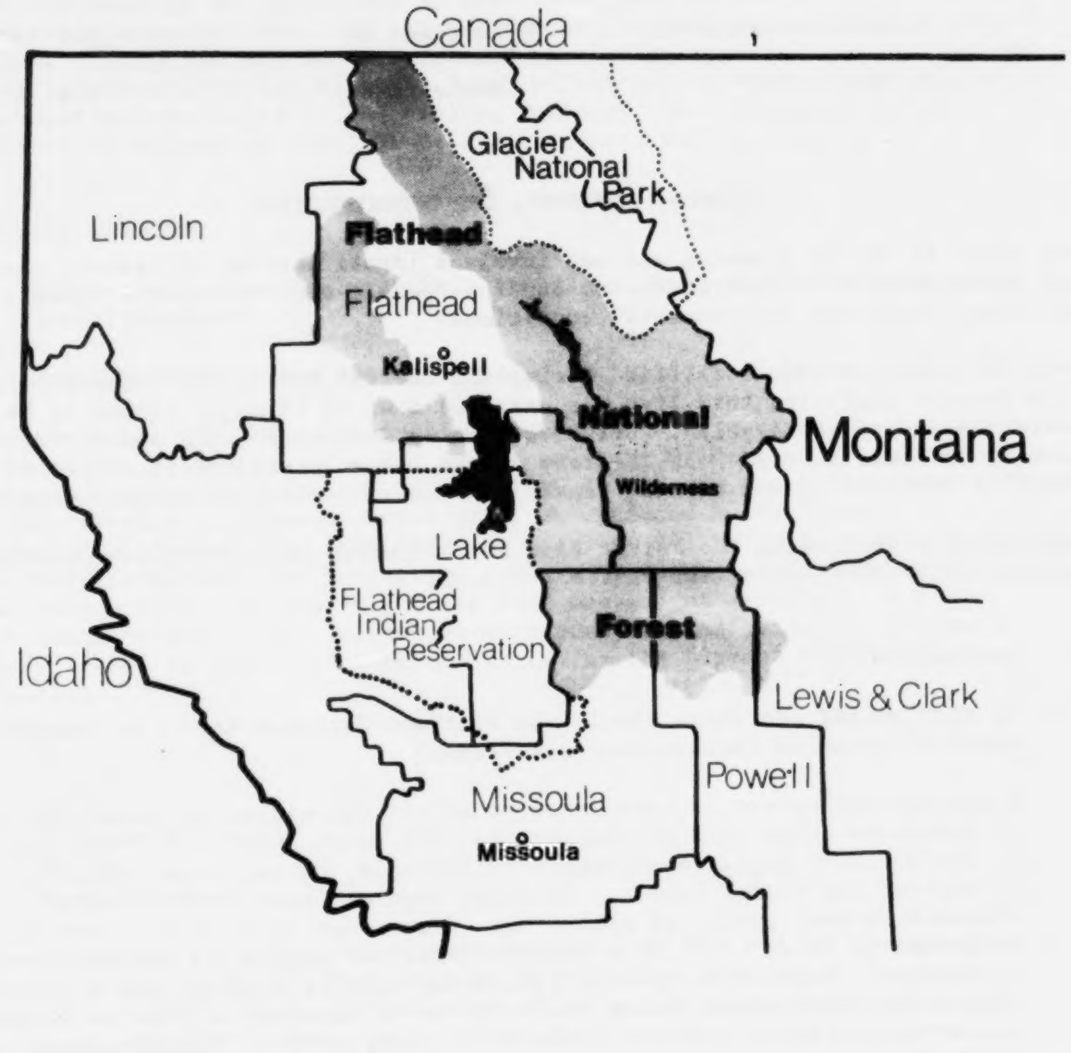
The Flathead National Forest occupies over 2.3 million acres in the northwestern part of Montana. The Canada/United States border forms the northern boundary. Approximately 130 miles of boundary are shared with Glacier National Park to the east. The Flathead Indian Reservation lies at the southern end of the Forest. Three National Forests comprise much of the remainder of the Forest's boundaries--the Lewis and Clark National Forest to the east, the Lolo National Forest to the south, and the Kootenai National Forest to the west.

The Forest's terrain typifies that of glaciated mountain lands, with high alpine basins and broad U-shaped valleys. Evidence indicates that all three types of glaciation--continental, alpine, and valley--occurred here. Nearly half of the nonwilderness land base is classified as "breaklands," with greater than 60 percent slopes.

Elevation, precipitation, and temperature extremes coupled with the area's interesting geologic history have resulted in diverse plant communities that support a wide variety of plant and animal life. The Forest has most of the habitat types common to western Montana, from the warm-dry Ponderosa pine/bunchgrass to the cool-moist whitebark pine types. Most of the land below 7,000 feet in elevation is capable of supporting tree cover, although localized topographic, climatic, and edaphic conditions cause occasional exceptions such as bogs and wet meadows, dry meadows, shrub fields, talus, rock outcrops, and avalanche chutes.

The existing vegetation shows the influence of fire. Extensive stands of lodgepole pine are most prevalent over the northern half of the Forest. Many of these stands are highly susceptible to infestations of mountain pine beetle. Fire's influence further manifests itself in vegetative mosaics, affecting species composition, age class, and life form.

The planning area includes additional acres from adjacent National Forests, these are included in the roadless resource evaluations. The Flathead National Forest is lead Forest in evaluating these contiguous roadless areas.


Canada
Glacier National Park
Lincoln
Flathead
Flathead
Kalispell
National
Montana
Wilderness
Lake
FLathead Indian Reservation
Forest
Idaho
Lewis & Clark
Powell
Missoula
Missoula

The following tabulation displays the roadless acres included from adjacent Forests.

Roadless Area	Forest	Acres
Bear - Marshall - Scapegoat - Swan 01485	Helena NF Lolo NF Lewis and Clark NF	58,700 120,900 336,628
Tuchuck 01482	Kootenai NF	2,300
Thompson Seton 01483	Kootenai NF	19,100
Le Beau 01507	Kootenai NF	800

ISSUES, CONCERNS, AND OPPORTUNITIES

The first of the 10 planning actions involves identification of issues, concerns, and opportunities to determine what benefits people want in terms of goods, services, uses, and environmental conditions.

Over 200 comments were identified during the initial public involvement process. With further analysis, this list was narrowed down to 18 major issues to be addressed in the Forest Plan. Criteria used to determine major issues included: ranking of issue at workshops, history of the issue, perceived intensity of conflict surrounding the current issue, and expected duration of the issue.*

The issues addressed in the Forest Plan are discussed below by resource with a summary of the public comment on those issues:

A. RECREATION

To what extent and where should the Flathead National Forest be managed for specific types of recreational activities?

Dispersed recreation is considered to be all recreation use occurring outside of developed sites such as campgrounds, ski areas, etc.. This use may occur in the unroaded Forest environment (wilderness, hiking areas, etc.) or throughout the roaded Forest. Existing roadless recreation opportunities are adequate to meet projected public use if measured in acres but lacking if evaluated in terms of visitor opportunities and quality of the recreation experience. Population growth, increasing tourist traffic, and a growing nationwide orientation toward the outdoors is expected to lead to increased use of the Forest's roadless areas by all user groups. Adequate developed recreation capacity currently exists to accommodate projected use for the next 5 decades for most developed recreation opportunities; however, opportunities also exist to increase the level of management of developed sites, to correct existing maintenance problems, and to change the distribution of developed sites by constructing additional developed facilities on sites currently being used. Concentrated public use is creating resource damage in some areas; this could be corrected through construction of developed sites designed to meet site-specific needs.

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* Records leading to the identification of major issues are available for review at the Forest Supervisor's Office, and more detailed information is in Appendix A.

Public perception is that at the present level of management, the Flathead National Forest is not providing a broad enough spectrum of recreation opportunity; i.e., a mix of developed and dispersed recreation. Some people were concerned about the effect of road management on the mix of motorized recreation opportunities. Of special concern is the adequacy of the trail system. Though the supply of developed recreation appears to be sufficient, there is dissatisfaction with the level of recreation opportunity related to developed recreation; e.g., of visitor contact. Most dissatisfaction, however, is related to the lack of dispersed recreation opportunity.

B. ROADLESS RESOURCE

-- **Which roadless areas or parts of roadless areas should be recommended for wilderness?**

-- **How should the areas not recommended for wilderness be managed?**

The Forest has 495,000 acres available that could be managed in the future for roadless values or additions to the existing wilderness system. Wilderness capacity generated by managing all 495,000 acres of roadless areas as full-service wilderness, would still be exceeded by the levels of projected wilderness use (809 MRVD per year) by 341 MRVD per year. Resolving the conflict between the long-range goals of wilderness and nonwilderness land uses will be the key to getting land management actions on a course to meet those future needs. Forest Service analysis indicates the following areas, listed in numerical ranking, as having the highest wilderness potential.

1. Swan Front
2. Swan Crest
3. Tuchuck
4. Thompson Seton
5. Mt. Hefty
6. Young-Nasakoin

Public comments on these issues were generally at one end of the spectrum or the other, stressing the high amenity values of an area or citing high commodity values. Those that opposed additional wilderness usually opposed adding any additional area, while those that supported more wilderness usually recommended adding large acreages. More public comments opposed any wilderness additions than supported new wildernesses. There was concern that motorized recreation opportunities in roadless environments are threatened by wilderness additions. Those supporting wilderness, support additions in the same ranking as shown above.

C. WILDERNESS

At what level should the Flathead National Forest manage the wilderness resource, including trail maintenance and fire management?

The ultimate answer to the wilderness management level question would be: the level that ensures minimum expenditure of public funds, provides maximum freedom of choice, absence of regimentation of the individual, retention of wilderness character, and other resource values of classified lands. Unfortunately past use, the resource damage that exists in some areas, and the increasing number of people desiring to visit and operate in the wilderness preclude the choice of the lowest management level - no management. These lands have limitations, and the management level should be that level necessary to address public and management concerns to correct existing problems.

Few people commented on wilderness management. Presently, however, differences exist between private, public, and commercial interests as to what constitutes wilderness resource damage or problems.

D. VISUAL QUALITY

What are the visual management objectives for viewing areas within the Flathead National Forest?

An inventory of the Forest has identified areas where the visual significance of the nonwilderness landscape is high. If the view is to remain natural appearing or relatively natural appearing, resource management activities in these important areas would be guided by recommendations that retain or partially retain the natural-appearing view over time.

There was a wide range of public opinion as to the importance of visual quality on the Forest. Some felt that visual quality should take precedence over the other resources because of its importance to recreation, tourism, or real estate values. Others felt that there is too much emphasis on visual quality, and that timber management activities do not detract from scenic values. The Noisy Face area, which forms part of the scenic eastern backdrop for the Flathead Valley, was the focal point of a timber harvesting versus scenic values controversy. Many people strongly supported land management which would preclude additional road building or clearcutting in the area. Selection harvesting from existing roads, however, was acceptable to many because they felt it would not adversely affect scenic values.

E. WILDLIFE AND FISH

How much and what type of habitat should the Flathead National Forest provide for diverse fish and wildlife species, including those classified under the Endangered Species Act?

Existing fishing pressure on some areas appears to be impacting fisheries production and hence the quality of the recreational fishing experience. The potential to increase fish populations exists through making investments in habitat improvement. Production potential for fish, however, is limited by water with low inherent productivity. Fish habitat improvements, a reduction of livestock grazing in riparian areas, and management of riparian zones to emphasize fisheries habitat would not necessarily provide an opportunity to meet Montana Department of Fish, Wildlife, and Parks objectives, but would allow opportunity for an improved recreational fishery.

Management of potentially suitable winter range for whitetailed deer, mule deer, and elk would allow for improvement of existing cover/forage relationships and support larger populations of these species. Opportunities exist to increase the number of hunting opportunities through increased big-game populations and a road management program that provides both adequate access for hunters and secure habitat for big-game animals.

The opportunities to provide habitat for threatened and endangered species are linked to providing security from human disturbance as well as contributing to their feeding requirements.

Public groups were primarily interested in habitat protection and management, particularly enhancement of winter range areas. People felt that low Forest Service budgets for fish and wildlife were limiting a more active habitat improvement program. There was concern for the effects of increased roading and concurrent timber harvest on all wildlife and fish habitats, particularly threatened or endangered species. Proposed management of the threatened grizzly bear was a key issue. Like many other issues, many thought the Plan was not doing enough for the bear, and a similar number thought that grizzly management was unnecessarily restricting other uses and resource production.

F. RANGE

What level of forage production can be used by domestic livestock, while protecting other Flathead National Forest resource values?

The concern for the other resources such as water quality, fisheries, and wilderness is not relative just to the amount of forage. The type of forage, soils, time of use, type of animal, physical controls, legislative classification, other resource designations, all influence the amount of forage which can be utilized from a given area.

Existing recreational stock grazing in the three wildernesses is believed to be at the highest level compatible with wilderness resource management. In some areas, excessive grazing is adversely impacting the range and wilderness resources.

There was no public interest at the workshops on this issue. It is an In-Service management concern.

G. TIMBER

-- **What should the sustained yield timber harvest level for the Flathead National Forest be, recognizing basic land productivity, economics, community stability, and other resource needs?**

— **What timber harvest, silvicultural, and reforestation methods should be used on the Flathead National Forest considering economics, energy, and ecological requirements?**

The 1969 Timber Management Plan was developed for a high level of wood fiber production on most of the nonwilderness Flathead National Forest land base. Since then, public concern and increased Forest Service emphasis on resources such as roadless recreation and wilderness, visual and water quality, wildlife habitat, threatened and endangered species, soils, and economics have been recognized as potentially conflicting with those timber management assumptions and objectives. There are widely differing public views regarding the degree of conflict and/or compatibility of timber harvest with other resource uses. These issues have generated widespread public input and responses because resolution of the issues is perceived to directly affect so many people's lifestyles and values.

National Forest System and corporate timber lands are the primary sources of wood fiber for local mills. The timber industry has indicated a need to better correlate Forest Service annual harvest schedules with the changes in timber volume harvested from private lands. At the current rate of harvesting on private lands, both corporate and small private ownerships, the demand for increased wood fiber from National Forest System lands may significantly increase in future years.

Disproportionately heavy timber cutting in some areas of the Flathead National Forest has created or threatened to create multiple-use conflicts and problems with future distribution of timber harvests. Past timber harvests have concentrated too many sales on lands with slopes under 40 percent. If timber harvests are to stay at current levels, the Forest Service must do more cutting on steep ground with slopes of 40-70 percent.

The public expressed concern over the extensive use of clearcutting. Much of this concern is based on past applications of clearcutting on a scale that is no longer used. Some people want the land to be reforested more quickly, while others see selection harvesting, which creates unevenaged stands, as the answer to balancing timber harvest and amenity concerns. The Flathead National Forest contains natural ecosystems where plant and animal species have evolved and adapted to even-aged forest mosaics created by fire. Scientific literature and past experience indicate that attempts to impose widespread uneven-aged management in these natural ecosystems will be ecologically and ultimately economically unsound. Evenaged management, consisting of a mixture of shelterwood, seed tree, and clearcutting in small units, closely depicts the natural successional process.

Generally the opponents of timber harvesting centered their criticism on the adverse environmental and economic effects of timber harvesting, not the volume of timber sold or cut.

Proponents of increasing timber harvest centered their comments on the need to increase the volume of timber supplied to local mills from National Forest System lands. They also feel the Forest Service "promised" higher levels of timber harvest and that mill capacity and the timber economy was developed on those anticipated volumes.

— **What utilization standards should the Flathead National Forest require in order to achieve optimum utilization of all wood fiber?**

The timber industry recently has made considerable improvements in the utilization of timber from Forest Service timber sales. Timber yield predictions are based on implementation of new utilization standards for the Northern Region. Recent public comment, however, indicates that not all timber industry can use the new utilization standards, and that these standards are unrealistic and too high. Consequently the amount of volume available is overestimated. This issue is addressed by displaying the consequences of using the new Northern Region Utilization Standards as well as the old utilization standards (see Chapter II and Appendix B, Chapter VIII).

— **How much access and availability of fuelwood for domestic and future commercial use should the Flathead National Forest provide?**

The public expressed concern about the Forest Service burning wood residue that they felt should be made available to them for firewood use. Improved utilization of timber from Forest Service sales has somewhat reduced the amount of material available for firewood. Also, access to areas where firewood is available has been a problem due to road closures.

Safety violations, cutting of timber for firewood in timber sales, and poor slash cleanup indicate a management concern for more public information about Forest Service policies and contraints on firewood cuttings.

H. WATER

To what extent can the Flathead National Forest coordinate management activities on National Forest System lands with adjacent private lands to protect and maintain the quantity and quality of the water resource?

Currently no local need exists for increased water yields; however, passage of a State water development plan by the 1981 Montana legislature indicates that the needs for water will increase. Occupying a critical headwaters position against the Continental Divide, the Flathead River drainage will be looked at closely as a source of high quality water. Opportunities to maintain high quality water require attention to the amount and distribution of timber harvested and/or roads built in certain areas as well as how the activities are carried out on the ground.

There was no public opposition to maintenance of water quality, but a difference of opinion on how much other resource use, especially timber harvesting, had to be restricted to ensure maintaining water quality. Sedimentation from logging and road building associated with logging was viewed as the primary Forest activity affecting water quality. A few people commented on the effects of increased water yields due to timber harvesting. Several commenters questioned whether predicted increases in sedimentation would violate State water quality standards.

I. MINERALS

Where, how much, and under what conditions should the Flathead National Forest provide for oil and gas exploration and development?

The best existing evidence indicates that opportunities to extract hard rock minerals on Flathead National Forest System lands are limited. Opportunities for oil and gas field development are rated as high from the speculative standpoint, but low from the probability of seeing on-the-ground commercial production. The physical and economic feasibility remains unknown. There are opportunities to explore for and develop hydrocarbons with standard resource protection stipulations, as well as opportunities restricted by concerns for special resource objectives. Opportunities to consider changes from current management direction are limited by existing Federal laws and land regulations regarding administration of oil and gas leases. The environmental analysis to support the oil and gas leases was declared to be in violation of NEPA and the Endangered Species Act in a 1985 Federal Court descision. The court ruled that all Flathead National Forest oil and gas leases be set aside. This court decision is under appeal to the Ninth Circuit Court of Appeals. All oil and gas leases have been suspended pending the outcome of this lawsuit.

Some members of the public hope that oil and gas exploration and leasing do not result in discoveries. Also if discoveries are made, the general public feels that subsequent development of those fields is unavoidable and necessary in view of national energy independence goals and local economic needs. Public input on eventual development will be in the areas of how to mitigate adverse impact on other resource values, especially water quality, air quality, wildlife, scenic values, and maintaining the Flathead's quality of life.

J. LANDS

— **To what extent should the Flathead National Forest adjust and consolidate landownership in order to support resource management and improve management efficiency?**

— **How should the Flathead National Forest deal with the impacts created by the activities on private land inholdings?**

Landownership pattern is one of the major factors which can affect the level and ability to apply intensive land management practices for the general benefit of the public. Management direction must determine to what extent landownership should be adjusted for management efficiency of the various resources involved.

The most critical concern is conducting land management in a dispersed land ownership pattern. This type of land management condition is time consuming, expensive, and may conflict with adjacent landownership management and desires. The concern is not just the effects other landowner activities have on National Forest System land, but also what effects Forest Service activities have on other ownership. It seems that the potential for better overall land management practices exist through landownership consolidation.

Little public comment was received on these issues, but the problems of checkerboard ownership and consideration for adjacent landowners were raised as management concerns.

K. SOILS

What level of management activities should take place on the Flathead National Forest while protecting the soil resource?

Land management activities require some soil displacement to varying degrees. Major causes of displacement include road development, harvest activities, slash disposal, site preparation, and grazing.

Glacial till soils on the Flathead National Forest are generally highly productive but susceptible to surface compaction. Compaction contributes to delayed reforestation. Tractors and rubber tire skidders are presently being used for logging, slash disposal, and site preparation work. Total percent of ground covered by these machines, soil moisture, and timing are key factors affecting soil degradation.

L. ROADS

How shall Flathead National Forest roads be constructed, managed, and maintained to best meet resource needs within sound environmental, economic, and social considerations?

Additional access through road construction is needed if the Flathead National Forest timber resource is to be managed, even if less development occurs than projected under Current Direction. Road construction, reconstruction, and maintenance directly support achievement of Forest objectives. Road management options include seasonal closures, permanent closures, and removal of the road from the Forest transportation system.

The public feels that road planning, construction, and management is one of the most important issues in the Forest Plan. The Forest Plan proposal to construct roughly 3,000 miles of additional roads over the next 50 years drew criticism from many respondents. Numerous people argued "no more roads" and expressed concern about impacts on wildlife habitat, water quality, and recreational opportunities. Even more people recommended institution of a more forceful road closure program.

M. PROTECTION

What fire management activities are appropriate on different areas of the Flathead National Forest?

Forest land managers have recognized that the diversity of landforms, land management objectives, and vegetative communities which exist within the boundaries of the Flathead National Forest present opportunities for the application of differing fire management prescriptions.

Opportunities to determine cost-effective fire management programs are determined by fire management objectives. The appropriate mix of fire management activities needs to be determined. An increase in the proportion of harvest on steeper slopes will necessitate some changes from the existing site preparation program as a more extensive prescribed burning program will be required.

Some people that commented on fire management felt that wildfire should be allowed to play its natural role within the wilderness, and that past fire history has shown a benefit to the ecosystem. Others felt that the policy of letting wildfires burn and the Forest's slashburning activities waste timber and wildlife resources.

— **How should the Flathead National Forest prevent or mitigate insect and disease damage to resource and economic values?**

This issue is primarily a management concern. Currently the Forest has serious infestations of mountain pine beetle. Expected mortality of some lodgepole pine stands is 70 to 100 percent in some cases.

Different harvest schedules and land designations provide opportunities to improve on the distribution of timber by age class. By increasing the number of tree species and age and size distribution on regulated timberlands, the risk of epidemic populations of insects and disease can be reduced.

SUMMARY OF CHANGES BETWEEN THE DRAFT AND FINAL ENVIRONMENTAL STATEMENT

A. INTRODUCTION

Following publication of the Draft EIS and Proposed Forest Plan Supplements in November 1984, the Flathead National Forest has held open houses and meetings with interested groups and organizations. Newspaper articles appeared in local papers, and members of the Forest staff made personal contacts to inform members of the public about the Forest Plan. Approximately 3,000 total written comments were received in the original and supplemental DEIS and Proposed Plan. These covered a wide variety of subjects. Summaries of the public involvement, the comments received, and the Forest Service response are found in Chapter VI along with the complete comments and responses for government agencies, elected officials, and Indian tribes.

All other public comments including the Forest Service response are reproduced in Appendix H of the final EIS. The combined input from all comments was the source for many of the changes made between Draft and final EIS.

The changes made between the Draft and final EIS include:

- Changes in the documents and maps as a result of public comment.
- Changes as a result of Forest Service reviews.

CHANGES IN DOCUMENTS AND MAPS AS A RESULT OF PUBLIC COMMENT

The final EIS, Forest Plan, and Maps reflect new data, revised management direction, monitoring requirements, and goal clarification. Many of these changes are due to public comment.

Changes resulting from public comment contributed to the formulation of a new Preferred Alternative (Alternative 17). Summarized below by resource are highlights of the major comments contributing to Alternative 17. These are not all inclusive. Other changes that led to the developement of a new Preferred Alternative are noted in the following section on changes resulting from Forest Service review and in the responses to government agencies, indian tribes, groups, and individuals in Chapter VI or Appendix H.

1. TIMBER HARVEST

— **Harvesting of timber at historic levels would adversely affect water quality on Forest and private lands, and the security needs of threatened and endangered species, big game, and old-growth dependent species.**

These concerns, along with our analysis of current economic conditions and data, do not indicate that timber sales, at the allowable sale quantity established by previous timber plans, will maximize net public benefits. As a result, the Decade 1 harvest level was held at the reduced harvest level of 100 MMBF proposed in the draft.

Balancing nonpriced concerns with priced benefit considerations has reduced the suitable timber base from that proposed in the DEIS.

In the Preferred Alternative (Alternative 17), the Trail Creek Grizzly Bear Management Area was removed from the timber base and increased by 8,679 acres. Riparian areas managed for wildlife habitat increased by 15,300 acres, and about 3,000 acres of economically marginal timber lands shifted to dispersed recreation, amenity values, and proposed wilderness.

All these changes benefit the nonpriced resource concerns expressed.

-- **The Forest is overprotective of noncommodity resources and is unnecessarily restricting timber harvest. This will have significant economic affects on the Flathead Valley and the timber industry.**

In Alternative 17 the ASQ (allowable sale quantity) measured in cubic feet was increased slightly over that recommended in the DEIS in order to increase salvage of beetle infested lodgepole and still maintain the 1 billion board feet ASQ. The Flathead National Forest will be responsive to timber harvest needs by programming up to the ASQ of 1 billion board feet. The annual program of sale offerings will depend on uncut volume under contract and current demand for timber. This will mean that the annual program of sale offerings may range from 70 MMBF to 130 MMBF during this period. This level of programed timber harvests, coupled with about 470 million board feet of excessive timber volume under contract, will provide the timber industry with more raw material than they have harvested over the past 10-15 years. The management of the programmed sale offerings in relation to market demand represents a change from that proposed in the DEIS.

2. WATER QUALITY

— **The Forest should give higher priority to maintaining or improving existing water quality. Sediment increases will seriously degrade water quality.**

— **The Forest is overreacting to the amount of sediment caused by timber harvest and road building versus sediment caused naturally.**

Due to comments on the draft documents from the State of Montana, the U.S. Environmental Protection Agency, and the public, several changes have been made to make the documents more meaningful. The Preferred Alternative includes several changes to reflect the Flathead's commitment to maintain a high level of water quality. The Forest added standards that place a high emphasis on prevention of sediment through continued use of Best Management Practices. Also added were stream by stream water quality analysis at the project level, early detection of problems through instream and onsite monitoring, and requirements for action including Plan amendment, if needed, when problems are detected.

Management practices would be used in all alternatives to carry out activities and to assure that they would accomplish Forest Plan goals, one of which is to meet or exceed State water quality standards. The method of comparing the relative risk of adverse effects on water quality is changed in the EIS. This is due to the lack of statistical reliability of sediment coefficients used in the Draft EIS comparison methods, and adopting the suggestions from the State of Montana and the U.S. Environmental Protection Agency for alternative comparison criteria and display.

3. WILDERNESS

— **The wilderness issue was strongly polarized. Those that opposed additional wilderness, criticized the Forest for making these areas inaccessible (i.e., for timber harvest, motorized recreation, and to elderly, handicapped, or lower income citizens). Those that supported more wilderness usually recommended adding large areas of existing roadless lands, advocating what they felt was a more protective and permanent designation than the Forest's roadless designations.**

The Forest recommended for wilderness those areas with the highest quality wilderness attributes and the most manageable boundaries in Alternative 17. The DEIS supplement recommended 48,000 acres for wilderness addition. The final EIS will recommend 98,080 acres for wilderness. The Jewel Basin area recommended for wilderness classification covers 31,783 acres. Additions to the Bob Marshall (Swan Front Addition and Limestone Caves Additions) and Great Bear Wildernesses (Slippery Bill Addition) would total 66,297 acres.

4. VISUAL QUALITY

— **The Forest's ability to harvest timber in visually sensitive areas was seriously questioned. The focus of most public concern was the Noisy Face area in the Swan Mountains.**

In Alternative 17 the Forest Service has recognized and given special consideration in the Forest Plan to areas of special concern due totheir visual importance to the communities in the Flathead Valley. Timber production will be reduced in some visually sensitive areas in order to maintain a more natural-appearing landscape.

5. THREATENED AND ENDANGERED SPECIES

— **Logging to improve grizzly bear habitat was too experimental to try in the Trail Creek area, our best habitat on the Forest.**

Within the Trail Creek Grizzly Bear Management Area, timber harvest will not be scheduled in Alternative 17. Where lands are capable of good regeneration, unscheduled timber harvest may occur to improve or maintain the proper relationships of cover to forage, or to provide a sustained yield of necessary grizzly bear habitat components. In response to public concern, all tentatively suitable timber land in the Trail Creek Grizzly Bear Management Area have been removed from the timber base and additional lands in the Young-Naskukoin area have been added. Proposed oil and gas leasing has been delayed for one decade.

— **There is additional key grizzly bear habitat in the Swan Mountains and Valley that should be Management Situation 1 instead of 2.**

Additional Swan Valley lands have been included in Management Situation 1. Currently, 94 percent of the Flathead's occupied grizzly bear habitat is designated as Management Situation 1.

— **The Forest should be more responsive to gray wolf recovery and possible occurence of mountain caribou.**

The increased emphasis on grizzly bear, deer, and elk habitat in Alternative 17 will benefit the gray wolf. The Forest Plan includes new gray wolf management guidelines similar to grizzly bear management guidelines. The Plan also commits the Forest to continue monitoring for possible mountain caribou occurence.

6. BIG GAME

— **The Forest needs to support mitigation measures designed to protect and enhance wildlife habitat adversely affected by the construction of the Hungry Horse hydroelectric project.**

There have been changes to the amount of winter range acres displayed in the Draft EIS. After reviewing the inventory, in coordination with Montana Fish, Wildlife, and Parks and the Northwest Power Planning Council's mitigation planning for Hungry Horse Hydroelectric project, the total acres increased. This is reflected in the Preferred Alternative (Alternative 17).

7. **NONGAME WILDLIFE**

-- **The Forest Plan fails to adequately protect snags that are important to cavity nesting birds and other wildlife.**

Substantial revisions in snag management standards were made to provide for snag habitat over the entire Flathead National Forest including Management Areas 15 (timber roaded), and 16 (timber without roads). The DEIS Preferred Alternative (Alternative 11) had no positive snag management direction in these areas.

Overall Forest-wide snag levels (outside wilderness) will be raised from approximately 41 % of maximum population level under the draft to approximately 68 % of maximum population level under Alternative 17.

Through implementation of Forest-wide standards, emphasis will be placed on protecting snags and live green trees which best suit the habitat requirements of most primary and secondary cavity nesters.

8. **MINERALS**

— **Public comments said that minerals were not being given adequate consideration as a valid resource. Minerals was viewed by some as always being secondary to surface resources.**

The new Preferred Alternative has set a Forest goal to facilitate exploration for and the orderly and efficient development of minerals and energy resources, recognizing the need for balanced multiple-use management. An exception to this broad Forest policy is the Trail Creek Grizzly Bear Management Area where a 10 year withdrawal from mineral entry is being recommended.

9. **ROADS**

— **Road closures should be increased on the Forest to protect wildlife populations. Many of the people who supported increasing timber harvest levels recommended road closures to mitigate the effects of the new access roads needed to harvest timber. By closing roads, they argued, you could manage timber and protect the wildlife.**

The Forest will implement a more intensive road management policy that is responsive to resource protection needs and public concerns. All existing system and nonsystem roads will be reviewed by the Forest as part of transportation planning for need and possible closure and/or obliteration. In the future, the public will see more road closures and lower road construction standards.

10. **TIMBER SALE ECONOMICS**

— **The Forest Service policies on below-cost timber sales and the use of capital investment funds to build roads are questionable. They need to look for more cost-effective ways to build roads and log.**

Concern over below-cost sales and capital investment roads has resulted in lower standard roads, less harvesting in economically marginal areas, and an increased emphasis on implementing cost efficient projects to meet long-term resource management goals. The new Preferred Alternative includes direction for economic analysis of timber sale projects to implement the management objective of minimizing below cost sales. Analysis of the value of timber sold in relation to all timber related costs, excluding roads, for the Flathead National Forest shows a positive net cash flow in excess of 3 million dollars over the past 6 years. Forest Plan analysis data indicates this situation will generally continue in the future, but some below cost sales will be unavoidable in Decade 1 in order to achieve overall short-term and long-term public benefits. The ability to recover costs on an individual timber sale basis is not a specific criteria for determining timberland suitability for any alternative. Overall economic efficiency in attainment of both priced and nonpriced benefits in response to public issues are criteria in selecting a preferred alternative.

11. COMMENTS WHICH OFFERED TECHNICAL CORRECTIONS, POINTED OUT INCONSISTENCIES, OR THE NEED FOR CLARIFICATION.

These have been checked and used to revise the documents or maps where applicable.

C. CHANGES AS A RESULT OF FOREST SERVICE REVIEWS

1. DOCUMENT AND MAP CORRECTIONS

The new Preferred Alternative includes the Forest direction contained in the Forest Plan and boundary changes affecting the maps as a result of ground truthing and review by Forest Service personnel.

2. ROADS

The road management program mentioned above under changes as a result of public comment will not only be responsive to public concerns for wildlife security, but In-Service concerns as well.

3. VISUAL QUALITY

The new Preferred Alternative clarifies guidelines regarding the types of timber harvesting methods compatible with meeting certain visual quality objectives. The Plan also recognizes that meeting some visual quality objectives will mean reduced timber yields.

4. RIPARIAN MANAGEMENT

The acreage displayed for riparian management was increased due to a calculation error found during Forest Service review.

5. TIMBER

Management direction has been changed for timberlands designated for timber management where aerial logging systems are the only apparent system to use at this time. Roadless logging methods will be used, unless site-specific analysis determines that a roaded system is economically and environmentally prudent.

READERS GUIDE

The remainder of the EIS is organized as follows:

- Chapter II describes alternatives by showing the resource outputs, costs, benefits, and major effects of meeting the objectives of each alternative. The environmental, economic, and social effects of alternatives are briefly compared.

- Chapter III provides a brief discussion of the existing condition of physical, biological, social, and economic components of the environment that may be affected by Forest management.

- Chapter IV identifies the environmental consequences which could result from Forest management programs and activities scheduled in each alternative.

- Chapter V lists the people directly involved with the preparation of EIS and Forest Plan documents.

- Chapter VI summarizes the public comments to the draft documents, and displays comments received from government agencies along with the Forest Service responses to the agency's comments.

- Chapter VII provides a glossary of technical terms and abbreviations used throughout the EIS.

- Chapter VIII includes references used and sited during development of the EIS.

- Volume II includes appendicies A through G and provides detailed subject information. Issue identification is detailed in Appendix A, description of the analysis process in Appendix B, and site-specific roadless area data in Appendix C.

- Unbound Appendix MM consists of all written comments received during the two formal public review periods, and Forest Service responses to these comments. Because this appendix is so large (9 volumes), copies were not mailed out. They are available and can be reviewed at the Forest Supervisor's Office, Kalispell, Montana.

Planning records, which document the planning process, are available for review at the Forest Supervisor's Office, 1935 Third Avenue East, Kalispell, Montana.

II. Alternatives

INTRODUCTION

This chapter presents the development, description, and comparison of alternative ways of managing the Forest's land and resources. The development process involves an analysis of the management situation which includes a determination of minimum and maximum resource and value potentials.

The second section covers the alternative descriptions and identifies the objectives of each alternative. The last section discusses where the alternative fits in the range, and how it responds to issues. The resource outputs, economic and social effects, and designation results are also covered.

ALTERNATIVE DEVELOPMENT PROCESS

A. CHANGES BETWEEN DRAFT AND FINAL

The Forest developed a new Preferred Alternative (Alternative 17) responsive to input received between draft and final documents.

B. OVERVIEW

Forest planning began by identifying public issues and management concerns. Refer to Appendix A for a description of this process. Once the issues were known, information was needed to determine the Forest's capability to respond to each issue. This step involved the analysis of the management situation and resource data. Economics information and environmental/legal constraints were examined. Benchmarks were developed and analyzed to measure resource and economic interrelationships and output ranges for alternative development.

Alternatives were developed that respond to the issues. Each alternative is evaluated as to how well it maximizes net public benefits, which include both priced and nonpriced benefits and costs. Not all costs and benefits can be priced. The interdisciplinary team considered both priced and nonpriced costs and benefits during alternative formulation.* The consideration of all costs and benefits is called "net public benefits" and represents the overall value to the Nation of all benefits, less all costs, regardless of whether costs and benefits are expressed in priced or nonpriced terms.

Present net value represents the priced portion of net public benefits. Present net value involves benefits that have a market value, such as timber, or have an assigned willingness to pay value, such as a recreation visitor day. Nonpriced public benefits do not have an assigned monetary value. An example of a nonpriced public benefit is visual quality. Alternatives were formulated to examine the tradeoffs between priced and nonpriced public benefits, such as reduced present net value due to constraints on the spacial distribution of timber harvesting.

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* See Appendix B, Section IV for a further discussion of net public benefits and economic tradeoffs among alternatives. Evaluation of these tradeoffs enables decision makers to select a preferred alternative that maximizes net public benefits.

Evaluation of these tradeoffs enables decision makers to select a preferred alternative that maximizes net public benefits.

The PNV component of net public benefit is discussed later in this chapter. The nonpriced components of net public benefit used in the alternative formulation process include:

-- big-game hunting quality,

-- recreation setting quality and diversity,

-- threatened and endangered species habitat,

-- water quality,

-- visual quality of the Forest landscape,

-- nongame species wildlife habitat,

-- local economic stability,

-- nonrecreation wilderness values,

-- plant and animal community diversity.

These were identified as significant by the public issues and management concerns.

These nonpriced components are further explained in the alternative comparison section along with several components identified after the alternatives were formulated (see "Significant Differences in Economic Values Among Alternatives" in this Chapter).

The alternative development process used here is outlined in 36 CFR 219.12. These regulations include the following goals for alternative formulation:

- Provide basis for identifying the alternative that maximizes net public benefits.
- Alternatives shall be distributed between the minimum and maximum resource potential and reflect a range of environmental resource uses and expenditure levels.
- Formulated to facilitate analysis of opportunity costs and tradeoffs.
- Formulated to evaluate effects on present net value, benefits, and costs.
- Provide different ways to respond to major public issues.

C. ALTERNATIVES AND THE 1974 TIMBER MANAGEMENT PLAN

Alternative development and evaluation is responsive to the deficiencies identified by Judge Smith in Civil Action CV-76-115-M regarding the Proposed 1974 Timber Management Plan. The deficiencies were addressed as follows:

1. The lack of documentation for, and alternatives to, proposed changes in the commercial forest land base are corrected by the wide range of alternative land uses considered and planning records documentation of the "Stage One Timber Suitability Screen Criteria" and the Stratification of FORPLAN Analysis Areas.

2. The conversion period for old growth based on a single land designation, a major factor in development of harvest schedules in the proposed 1974 Plan, was not used as a variable in formulation of alternative harvest schedules in this planning process. Rather, harvest of old growth is a function of the multiple-use management objectives and economic analyses associated with each alternative. The effects of alternatives on harvest of old growth are discussed in Chapter IV.

3. Deficiencies noted in the 1974 analysis of alternatives' effects on esthetics, road costs, and watersheds are corrected through documentation of analysis procedures in the planning records and through the display and discussion of effects in Chapter IV.

4. Deficiencies in the documentation of timber yield tables are corrected by documentation in the planning records which includes evaluation and selection of methodologies for timber yield table development, coordination with timber industry representatives and the timber volume and economic tables used in the FORPLAN model.

Refer to Appendix G for more background information and the procedures used to correct the deficiencies.

D. ANALYSIS OF THE MANAGEMENT SITUATION

The analysis of the management situation determined resource supply potentials by establishing minimum and maximum production levels called benchmarks. A level was also established from which the costs and effects of applying regulation and policy constraints were measured. Production capabilities were determined for single resources and for a set of multiple resource outputs that maximized present net value. The current level of goods and services, and the most likely amount to be provided in the future if current management is continued, was examined in relation to public issues and opportunities for change identified. This analysis established the benchmark levels required by NFMA (National Forest Management Act of 1976) regulation 36 CFR 219.12 (e).

1. BENCHMARK LEVELS

During the Analysis of the Management Situation, the ID team determined existing and potential supplies of resources by establishing maximum production levels called benchmarks. The FORPLAN computer model was used to establish the supply potentials for timber, range, wilderness, and big-game winter forage. Analyses conducted without the computer established the production potential for grizzly bear habitat, fish habitat potential, and the supply potential for recreation. The FORPLAN model was also used to project existing and potential supplies of resources resulting from continuation of the current direction contained in existing plans.

In addition, a minimum level benchmark was developed to indicate resource production levels and management costs that would result if the Forest were managed with a minimum budget sufficient only to maintain basic soil productivity, water quality, and existing investments. This benchmark displays the outputs and unavoidable costs and benefits associated with custodial management.

Another benchmark was developed that displays the mix of resource uses and schedule of resource outputs and costs that would result if economic efficiency were the primary management objective. This benchmark shows how the Forest would be managed if present net value of priced benefits were maximized.

The ID team used the benchmarks as one factor delineating the range of alternatives that could be considered (other factors included public demand for resources and economic considerations). In addition, opportunity costs of priced benefits associated with the resource objectives of different benchmarks and alternatives were determined by comparing them to the Maximum PNV Benchmark.*

2. CONSTRAINTS AND MINIMUM MANAGEMENT REQUIREMENTS

Regulation and policy constraints applied to benchmarks have, in most cases, the effect of reducing the maximum resource supply potential. NFMA regulation 36 CFR 219.27 specifies that certain MMR's (minimum management requirements) be included in the planning process. The methods to meet these minimum management requirements include developing standards, guidelines, and appropriate management practices for inclusion in multiple-use management prescriptions; assignment of management prescriptions and intensities containing specific practices to analysis areas in FORPLAN; and applying specific constraints in FORPLAN.

A detailed discussion of MMR's, constraints, benchmarks, and results can be found in Appendix B, section VI. All benchmarks were designed to meet the MMR's in 36 CFR 219.27.

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* See Appendix B in Volume II of this document.

The minimum management requirements used in this analysis are designed to:

- — Protect soil productivity and water quality by controlling timber harvest, timber intensity, logging system, road density, fuel treatment, site preparation, and watershed condition.
- -- Minimize hazards from flood, wind, wildfire, erosion, or other physical forces.
- -- Reduce hazards from pest organisms.
- -- Protect riparian zones by specifying silvicultural system, unit size, and road design.
- — Maintain diversity.
- -- Provide for adequate fish and wildlife habitat to maintain viable populations.
- -- Assure consistency with multiple-use laws.
- -- Protect threatened and endangered species habitat.
- -- Provide for utility and transportation rights-of-way and corridors.
- -- Maintain road construction standards.
- -- Provide for temporary road revegetation.
- -- Maintain air quality.
- -- Ensure reforestation.

Except for the Minimum Level Benchmark, all benchmarks were constrained as follows:

- -- All benchmarks complied with minimum management requirements.
- -- An ending timber inventory constraint was used so that the timber inventory in 150 years will equal or exceed the volume that would occur on a regulated Forest.
- -- A timber harvest flow, using sequential bounds of a 20 percent decrease or increase; or a timber harvest flow based on NDF (nondeclining flow), that is, the harvest volume of any given period is greater than or equal to the preceeding period's volume in all but the Maximum Timber and Current Direction Benchmarks. These two benchmarks have a nondeclining yield-evenflow constraint.
- -- Minimum timber rotation ages are set at the age where 95 percent of the CMAI (culmination of mean annual increment) timber volume occurs; or timber rotations based on utilization standards.
- -- An objective function of maximizing PNV (present net value) was used except in the Minimum Level Benchmark.
- -- A minimum level for the existing wilderness, Jewel Basin Hiking Area, Coram Experimental Forest, and the Wild and Scenic River acres was maintained in all benchmarks.
- -- The Minimum Level Benchmark was constrained to produce no management outputs such as timber harvest and livestock grazing, and to determine the minimum basic cost of Federal ownership.

Further discussion of constraints can be found in Appendix B, Section VII.

3. BENCHMARK DESCRIPTIONS

Following are summaries of the benchmarks developed and considered in the Forest planning process. There are several variations of some benchmarks, each using a slightly different set of constraints and assumptions to meet the same overall objective. These variations establish the costs and effects of various constraints measured by change in PNV or resource production levels.

A detailed description of the formulation of benchmarks and variations, along with a discussion of analysis results, is included in Appendix B.

a. Maximum Present Net Value

This benchmark established the mix of resource uses and schedule of outputs and costs that maximized PNV using market and nonmarket assigned values. Minimum management requirements were met, a timber harvest floor was used, and the timber harvest flow was limited to a 20 percent increase or decrease between decades. Information from this benchmark was used to help develop alternatives. The CMAI constraint did not affect PNV on the Flathead National Forest. This benchmark is displayed in this EIS when a comparison of alternatives is made in order to provide a reference to the maximum present net value potential considered.

b. Maximum Timber

The maximum legal capability of the Forest to produce timber was determined by this benchmark. Timber production was maximized over the planning horizon subject to nondeclining yield, CMAI, and meeting minimum management requirements. The final benchmark was run with a maximum PNV objective subject to the maximum timber volumes. This benchmark was not carried forward as an alternative because it does not adequately provide for multiple uses. It also is not responsive to the public issues and concerns. This benchmark, however, was used to develop and test the range of alternative timber outputs.

c. Maximum Livestock Range

The maximum capability of the Forest to supply transitory range forage for domestic livestock is estimated by this benchmark. Range forage was maximized for 15 decades subject to CMAI, NDY, minimum management requirements, and a 20 percent increase or decrease in timber harvest flow between the decades. The final benchmark was run with a maximum PNV objective subject to the maximum forage volumes. This benchmark was not carried forward as an alternative because it does not adequately provide for multiple uses in response to public issues. The benchmark was used, however, to test the range of forage outputs and the feasibility of meeting RPA (Resource Planning Act) targets for livestock.

d. Maximum Big-Game Winter Range Habitat

The purpose of this benchmark was to analyze the potential for deer and elk based on the availability of usable forage on potential winter ranges, which require optimum distribution of forage and cover. This benchmark established the maximum potential for overwintering elk based on forage production, but it was not carried forward as an alternative since it does not adequately provide for other multiple resource uses. It was used to develop potential elk carrying capacity in several of the alternatives. The benchmark was developed with constraints similar to maximum livestock range, except that timber inventory constraints were applied to winter ranges to ensure adequate cover to make the forage usable by animals.

e. Maximum Wilderness

Wilderness was maximized by assigning all 495,000 inventoried roadless acres to wilderness. The benchmark determined the benefits, costs, and outputs of wilderness. The benchmark also establishes the maximum capacity of the Forest to add to the National Wilderness Preservation System and provide for wilderness recreation. This benchmark was carried forward as Alternative 9.

f. Minimum Level

This benchmark defined the minimum costs of public landownership and the resource outputs which are incidental to Forest management. This benchmark served as a minimum reference point to develop and test alternative outputs and costs which result from Forest Service management activities. This benchmark is displayed in this EIS when a comparison of alternatives is made in order to provide a reference to the minimum level considered.

g. Current Direction

This benchmark defined the current level and likely amount of goods and services expected in the future if current management direction is followed. This benchmark was carried forward as Alternative 7. It was used to determine need and opportunities for change in responding to public issues and as a basis for comparing other alternatives.

4. BENCHMARK ANALYSIS

Analysis of the benchmarks established upper and lower potential production levels for selected resources. Additional analysis was done to estimate projected use levels. The following resources were analyzed:

RECREATION

a. **Developed Recreation** on the Flathead National Forest includes both private and public facilities. Sixty-seven summer homesites and six resorts, including the Big Mountain Winter Sports Area, provided about 118,850 RVD's (recreation visitor days) in 1980, with the majority of that use occurring at the Big Mountain facility.

Public developed sites include 28 campgrounds and picnic areas. Actual use of public sites in 1980 was 170,500 RVD's. This level of use is about 65 percent of optimum, indicating use that is relatively high but generally not in excess of capacity.

Developed site recreation visitor day capacity provided by existing public and private facilities (1,031,000 RVD's) exceeds the Forest's RPA objectives through the year 2030. Assuming that the Flathead National Forest will continue to provide the same proportion of developed recreation use as it did in 1980, that the land base will remain constant, and that increases in developed recreation will be proportionate to population increases in the Forest's zone of influence, developed recreation demand or use will increase 30 percent from 1980 to 1990 (see Table II-1). Much of this increase in participation at developed sites relates to downhill skiing. A significant increase in use of public campgrounds and picnic areas is indicated, probably exceeding the existing capacity in 50 years, however, no new capacity will be needed in Decade 1.

b. **Dispersed Recreation** is considered to be that recreation occurring either in the unroaded Forest environment or throughout the roaded Forest. Of the Forest's estimated 500,500 RVD's of use in dispersed areas, about 77 percent occurred in a roaded environment (including activities such as berrypicking, snowmobiling, fishing, hunting, driving for pleasure, and roadside camping) while 23 percent occurred in an unroaded environment (backpacking, hiking, fishing, hunting, and so on).

Dispersed recreation opportunities in the existing unroaded environment are not being fully realized. In a 1980 survey of the trail system based on the Northern Region's accessibility criteria, only 43 percent of the trail system was adequate. Thus while 386,000 acres are managed to provide unroaded recreation opportunities, actual opportunities are low. In addition, existing management direction does not always assure that roadless acres with high recreation values are managed as such.

Assuming that the Forest will continue to provide almost the same proportion of roaded and roadless dispersed recreation opportunities that it did in 1980, and that the land base will remain the same, projected dispersed recreation use, displayed in Table II-1, will almost double the 1980 situation by the turn of the century.

RPA objectives for dispersed recreation opportunities on Flathead National Forest appear to be conservative given existing projected use. By the year 2030, the Forest is expected to provide the capacity to absorb 774,000 RVD's for both roaded and roadless dispersed recreation use while projected use exceeds that level by 1995.

TABLE II-1 Recreation Potential, Existing Use, Projected Demand, and RPA Objectives (Average Annual RVD'S) - Flathead National Forest

	Maximum Production Benchmark (Capacity)	1980 Actual Use**	Projected Levels of Use*** Year/RVD's	RPA Objectives Year/RVD's
Developed Recreation (RVD's)	1,031,000	289,400*	(1985) 329,000 (1995) 402,700 (2005) 493,700 (2015) 601,300 (2025) 731,500	(1980) 320,304 (1990) 343,190 (2000) 327,790 (2010) 337,560 (2020) 354,470
Dispersed Recreation (RVD's)		500,500	(1985) 568,100 (1995) 757,000 (2005) 989,800 (2015) 1,226,500 (2025) 1,600,500	(1980) 597,333 (1990) 647,000 (2000) 702,000 (2010) 745,000 (2020) 773,900
Wilderness Recreation	468,000	137,000	(1985) 204,800 (1995) 315,000 (2005) 451,000 (2015) 612,700 (2025) 807,700	

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* Corrected RIM (recreation information management) data, reflecting change in the RVD's reported for The Big Mountain Ski Winter Sports Area.

** Actual use data is drawn from RIM - an inventory system with data collection problems that make the information available for the Forest inexact; however, this is the best available information.

*** Projections for the Flathead National Forest were developed by the Northern Regional Office specifically for use in Forest planning. The simple linear regression model is based on population trends in western Montana and past reported recreation use on the Forest. As with any set of projections, these are more valid in the short run as opposed to the long term.

Specially designated recreation areas contribute substantial recreation opportunities. These areas on the Flathead are:

1.) The Flathead Wild and Scenic River System

The three forks of the Flathead River classified under the Wild and Scenic River Act consist of two "Wild" segments, three "Recreational" segments, and one "Scenic" segment, totaling 219 miles of classified river. Total use of the designated portions of the Flathead River has increased 77 percent from classification in 1978 to 1980.

A higher funding level for the Flathead Wild and Scenic River would mean: high levels of visitor contact and education; reducing litter, trespass, and conflict between private landowners and recreationists; and funding for interagency coordination, data gathering, resource monitoring, and river management planning.

2.) Jewel Basin Hiking Area

Jewel Basin was classified by the Regional Forester as a Special Roadless Area in 1970. The 15,368 acres have been managed to provide roadless backcountry hiking opportunities. Motorized use and horse travel have been prohibited. Hiking use in Jewel Basin has increased 500 percent from 1970 to 1980 in spite of relatively poor access from the west side, which is closest to area population centers. Funding for management of the areas has been low, resulting in limited trail maintenance, adverse site impacts, and violations of restrictions on motorized and horse use.

VISUAL QUALITY

The scenic environment throughout the Flathead National Forest is diverse. Much of the Forest maintains a natural or near natural appearance. Only a relatively small percentage of the total Forest acreage shows signs of modification by people. The majority of the modifications that do occur are due to activities associated with timber management.

Current Direction for areas with Unit Plans specified management that is responsive to recommended visual quality objectives, often at a high cost. In other areas of the Forest, managed under the older District multiple-use plans, the recommended objectives are not met by existing direction. Some of these are critical viewing areas where the visual quality has been degraded, or would be over time under Current Direction. These situations offer opportunities for change.

WILDERNESS

The Flathead National Forest administers all of the Mission Mountains and Great Bear Wildernesses and about 70 percent of the Bob Marshall Wilderness. These areas comprise about 5 percent of the National Wilderness Preservation System in the lower 48 States and about 46 percent of the Forest's land base.

The three wildernesses provided 137,000 RVD's of use in 1980. Wilderness use on the Flathead National Forest is predicted to double by 1995 and quadruple by 2025. Based on these assumptions, demand for wilderness recreation will exceed the capacity of the wildernesses by the year 2000 (see Table II-1). The level of use is projected to exceed the maximum potential of the Flathead National Forest to provide for wilderness recreation.

ROADLESS

Most Flathead National Forest roadless areas are areas of the Forest that have never been developed because it has not been economically or socially desirable to do so.

Seventeen roadless areas were inventoried and evaluated in RARE II and were designated for nonwilderness uses in the 1979 Final Environmental Impact Statement. Since 1979 nonwilderness activities such as timber harvest and roading have occurred in some of the areas resulting in a reduction in the amount of roadless land. Roadless areas evaluated for wilderness prior to RARE II in a "Unit Plan" also called for nonwilderness management.

The Forest presently has approximately 495,400 acres of inventoried roadless lands that qualify for inclusion into the National Wilderness Preservation System. They provide the potential for meeting some of the National, Regional, and Forest wilderness need because of the opportunity for solitude, primitive recreation, natural intergrity, and outstanding scenery and appearance.

WILDLIFE AND FISH

The Flathead National Forest provides habitat for approximately 250 species of wildlife and 22 species of fish. National Forest management of wildlife and fish populations is oriented toward protection and improvement of fish and wildlife habitat.

a. Fish

There are approximately 3,400 miles of streams on the Forest, about half of which support fish populations. About 600 miles of the streams with viable fish populations are located in wildernesses, with 1,100 miles of stream fisheries occurring throughout the remainder of the Forest. The streams generally have low-to-moderate levels of productivity.

Based on fish population counts and productivity modeling using habitat parameters, the Forest's waters are estimated to support about 1,500,000 trout and 350,000 whitefish.

In 1980 the Forest received about 89,000 recreation visitor days of fishing use. Fishing use generally is expected to increase commensurate with increases in recreational activities. Based on recent trends, "float fishing" on the Flathead Wild and Scenic River and fishing from small rafts on some of the more remote lakes will increase more than streamside or lake edge fishing. Fishing pressure on some of the Forest's streams and lakes is causing resource damage and/or decreased fish populations.

The potential to increase fish populations exists through making investment in fish habitat improvements. Production potential for fish is limited by the low productivity of Forest streams. The maximum increased production potential for the Forest associated with direct habitat improvement is about 30,000 fish per decade.

For analysis purposes, it was assumed that Forest management activities do not affect lakes or wilderness stream fish populations. The projection of Current Direction focuses on impacts to trout populations in nonwilderness ("managed") streams. In these streams, timber management activities, including road construction and maintenance can adversely affect fish habitat. Conversely, fish habitat improvement projects can improve habitat and mitigate some adverse impacts.

Current management direction adversely impacts trout populations as displayed in Table II-2. Riparian management under Current Direction does not provide adequate opportunities for fisheries habitat improvement.

It is unlikely that other fish species would decline at the same rate that trout populations do. In some instances, many species, including nongame fish, would thrive and even increase.

b. Big Game

Estimated existing and potential population levels for elk, mule deer, and whitetailed deer are shown in Table II-3 and Table II-4. Winter range forage is generally believed to be the factor limiting population growth.

Some of the winter ranges on National Forest System lands are within the wildernesses where forage production cannot be manipulated. Thus, the potential populations supported by wilderness winter ranges are generally constant, fluctuating only with weather patterns and successional stages of plant growth. About 40 percent (about 2,000 animals) of the Forest's current total elk and mule deer population winters within the wildernesses.

TABLE II-2 Catchable Trout* (Potential and Existing)*** - Flathead National Forest

Current Situation (1980 - Base Year)	Lakes	987,000
	Nonwilderness Streams	473,000
	Wilderness	60,000
	Total	1,520,000

		Decade				
		1	2	3	4	5
Current Management Direction	Lakes	987,000	987,000	987,000	987,000	987,000
	Nonwilderness Streams	432,390**	395,010	315,060	254,030	178,810
	Wilderness	60,000	60,000	60,000	60,000	60,000
	Total	1,479,390	1,442,010	1,362,060	1,301,030	1,225,810

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* Population estimates and projections are based on the Forest's indicator species (bull trout and westslope cutthroat trout) which are most sensitive to impacts to water quality.

** These figures reflect the change that would occur in the first decade, and can be compared to the estimates of existing population.

*** Catchable trout numbers presented here are population estimates.

TABLE II-3 Elk and Mule Deer Potential Populations* - Flathead National Forest

Decade	1	2	3	4	5
Maximize Winter Range Forage Benchmark	5,647	6,380	8,540	9,227	9,807
Current Management Direction	5,928	6,075	6,711	6,837	6,698

* Total potential elk and mule deer supported by winter range forage includes nonwilderness animals plus a constant 2,000 animals assumed to be in the wildernesses.

TABLE II-4 Whitetailed Deer Potential Populations - Flathead National Forest

Decade	1	2	3	4	5
Maximize Winter Range Forage Benchmark	1,093	1,307	1,960	2,160	2,360
Current Management Direction	1,173	1,217	1,408	1,445	1,404

Maximum potential for winter range forage production requires time to attain the correct cover-to-forage relationship. By the fifth decade, the Forest could provide forage on lands outside the wildernesses to support over 9,800 elk and mule deer, if that were the sole management objective and all potentially suitable winter range was managed as winter range (see Table II-3). If the wilderness animals are included, the Forest's forage could support 11,800 elk and mule deer.

Increased levels of hunting pressure are anticipated, if current trends continue. In 1980 the Forest experienced 60,000 RVD's of hunting, an increase of 20 percent over 1970.

c. Threatened and Endangered Species

The Flathead National Forest provides habitat for three endangered species (the gray wolf, bald eagle, and peregrine falcon) and one threatened species (the grizzly bear). The Forest is cooperating with State and private wildlife organizations to assess the existence and potential of mountain caribou in the Whitefish Mountains. If located, the caribou would probably be listed as an endangered species in Montana.

The most likely area for maintenance of a viable population of wolves is in the north end of the Forest, adjacent to Glacier National Park and Canada. Forest biologists estimate the current wolf population at 10-20 animals whose home range includes British Columbia and Glacier National Park. At this point security from human disturbance appears to constitute the most critical habitat component.

The Flathead National Forest provides about 65,930 acres of suitable nesting habitat for bald eagles, with 10 active nests on or adjacent to National Forest System lands and nine birds fledged in 1980.

Although the Forest provides approximately 59,000 acres of suitable nesting habitat for peregrine falcon, there are no verified active nests at this time.

Most of the Flathead National Forest is considered essential grizzly bear habitat in the Grizzly Bear Recovery Plan prepared by the U.S. Fish and Wildlife Service. This includes all of the wilderness and nonwilderness acres of the Forest except the 70,000-acre "Island Unit" of the Swan Lake Ranger District (located west of Kalispell) and approximately 175,000 acres of the Tally Lake Ranger District west of Highway U.S. 93. Forest biologists estimate the existing population to be between 150 and 180 grizzly bears.

The grizzly bear habitat improvement program to date has consisted largely of implementing road restrictions to increase bears' security from human disturbance and some prescribed burning in bear feeding areas to increase browse production.

The Grizzly Bear Recovery Plan identifies a target recovered grizzly bear population in the Northern Continental Divide ecosystem of 440 to 680 bears. The Flathead National Forest is responsible for a portion of this population. This means the Forest would need to provide the essential habitat components necessary to potentially support approximately 207 bears, utilizing a high level of road restrictions and habitat improvement techniques, including timber harvest, planting of desirable shrubs such as huckleberries, and prescribed burning.

Maximum production potential, if all prime grizzly bear habitat were managed "for" grizzly bears, would be habitat to support 230 to 250 bears.

d. Wildlife Diversity

The diversity of habitats necessary to support the array of native species appears to be adequate. Those groups sensitive to Forest management activities--the tree dependent group, old-growth dependent group, and riparian tree dependent group--are protected to the degree that the Flathead Wild and Scenic River corridor, Jewel Basin Hiking Area, Coram Experimental Forest, the Big Mountain Winter Sports Area, and the three wildernesses are protected.

In other areas of the Forest, habitat diversity is most significantly impacted by timber management activities. Current management direction would over time reduce the acres contributing old growth and riparian tree habitat from the existing situation.

RANGE

With the exception of natural wet meadows throughout the Forest and natural grass areas in the Bob Marshall Wilderness, the rangeland on the Flathead National Forest is transitory. Forage production on transitory range depends on vegetative manipulation, such as logging and fire.

About 485,000 acres (39 percent) of the nonwilderness Forest are considered potentially suitable for management as grazing allotments for domestic livestock. Wilderness lands have only 357,000 acres (33 percent) which are potentially suitable.

Maximum transitory range forage production could theoretically support at most 12,000 AUM's (animal unit month) of domestic livestock on nonwilderness lands. If this were adjusted to reflect transitory range that is or would be accessible and manageable, the Forest could support at most 4,120 AUM's of permitted livestock use.

Twenty allotments have been active within the last few years. The Forest's actual grazing during 1980 was 3,654 AUM's (nonwilderness), which is below the 3,850 AUM's that would be available annually under Current Direction if all existing allotments were fully used.

Although local demand for Forest nonwilderness range can be expected to slowly increase in the next decade, the following factors will dampen increases: a relatively small local livestock industry, high transportation costs; and continuing declines in area cattle numbers as property values increase and ranches are subdivided into smaller parcels.

Wilderness forage is grazed by recreationists' stock, Government administrative stock, and wildlife. The amount of forage considered available for transportation stock is constrained by criteria that are designed to protect the wilderness resource. Existing levels of wilderness forage use are estimated to be the highest levels acceptable given these criteria. In fact some areas of the wildernesses are currently being over utilized, creating adverse impacts on the forage and wilderness resources. Other areas are being underused. Ideally, use should be better distributed. Low levels of funding limit the efforts to disperse use and improve visitor education.

The Flathead National Forest maximum potential for domestic livestock forage is estimated to support 11,000 AUM's of grazing use. The 1980 RPA target of 20,000 AUM's by the year 2030 is well above the Forest's maximum forage production capacity.

TIMBER

About 835,747 acres or 35 percent of the Flathead National Forest are tentatively suitable for producing commercial timber.* The existing mixture of timber on the Forest is composed of 18 percent lodgepole pine (tree stands with two-thirds or more of the volume lodgepole pine) and 82 percent mixed conifer stands.

Since 1975, mountain pine beetle populations have been at epidemic levels, severely impacting the lodgepole pine. The infestation is moving through susceptible stands across the Forest, and the epidemic is expected to subside by 1990 as susceptible lodgepole pine stands are killed or harvested.

Historically, the majority of timber management activity has occurred on the less than 40 percent slopes. Of the total potentially suitable commercial timberland, 46 percent occurs on slopes of 40 percent or less, 27 percent on 40 to 60 percent slopes, and 27 percent on slopes exceeding 60 percent slope.

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* The timber inventory data base used in this Forest planning process includes lands producing at least 20 cubic feet of timber per acre per year.

The 1969 Flathead Timber Management Plan, adjusted for land classification changes, projects an allowable timber harvest volume of 124 MMBF per year. The average annual volume sold since 1975 has been 116.2 MMBF per year. The quantity cut for the same 15-year period is 101 MMBF per year.

The Forest currently has about 475 MMBF of timber volume sold and under contract but uncut. This level of uncut volume is higher than the historical average of about 200 MMBF. National economic conditions have led to this higher volume sold but uncut. This volume probably will be reduced during the next 3 years.

If timber harvest is maximized on all potentially suitable Forest acres, the biological production potential of the Forest is 171 MMBF for the first three decades with a long-term sustained yield capacity of 201 MMBF. Normal production capacity of zone of influence sawmills, producing at least 10 MMBF per year, was determined in 1976 to be 687 MMBF (about 322 MMBF in Flathead County).

Timber from the Flathead National Forest has historically been processed primarily in Flathead County, with smaller percentages utilized by mills in Missoula and Lake Counties. Approximately half the timber volume used by Flathead County mills has been harvested from Flathead National Forest lands. About one-fourth the volume used in Lake County and a much smaller percentage, but higher volume of material, processed in Missoula came from the Flathead National Forest.

The Forest's RPA timber harvest objectives could be met by continuing the management direction specified under Current Direction. Table II-5 displays the timber harvest volumes and suitable land base that would exist on the Forest under Current Direction and the maximum timber production benchmark. RPA objectives are also displayed.

TABLE II-5 Timber Potential Base Harvest Schedule - Average Annual MMCF (MMBF in parentheses) - Flathead National Forest

Decade	1	2	3	4	5
Maximize Timber Benchmark	42.8 (171)	42.8 (171)	42.8 (171)	44.6 (178)	47.5 (190)
Current Management Direction	30.8 (132)	30.8 (122)	38.5 (167)	38.5 (143)	38.5 (161)
RPA Objectives	(119)	(120)	(135)	(149)	(167)

VEGETATIVE DIVERSITY

Flathead National Forest plant communities are naturally diverse (referring to the distribution and abundance of different plant and animal communities across the Forest). Most of the major vegetative habitat types common to western Montana are located on significant acreages of the Forest. The interaction of topographic and climatic variation is evidenced in the wide array of habitats, ranging from the warm dry ponderosa pine/bunchgrass type to the cool moist whitebark pine types. Nearly all tree species native to western Montana grow within the Flathead National Forest boundaries.

The commercial timber management program, which converts mature timber stands to vigorous young stands through timber harvesting, has had a significant impact on vegetative renewal and diversity. Even-aged regeneration (shelterwood, seed tree, and clearcut) systems have been used since the 1950's, and a substantial portion of the old growth on the Forest has been harvested.

Even-aged forestry techniques provide the closest duplication of natural timber stand regeneration processes (wildfire)*. Wildfires of sufficient intensity to regenerate mature timber stands are not socially acceptable in the developed portion of the Forest. Even-aged management duplicates the regeneration abilities of wildfire, but under controlled circumstances. Proper distribution of even-aged management cutting units create a mosaic of vegetation types, age classes, and species diversity than could be expected under other prescriptions applied over a large area (see Chapter IV, Silvicultural Systems, for more detailed discussion and reasons for determining optimal methods).

Sufficient old growth to provide habitat for viable populations of old growth dependent animal species remains throughout the Forest in areas where management objectives preclude timber harvest. In addition, riparian wildlife management areas provide for uneven-aged timber management while maintaining old-growth goals. Accelerated harvesting of extensive stands of mature, even-aged lodgepole pine has the potential for increasing species mix by artificially regenerating many of these stands with other species. Existing diversity appears to be adequate to meet multiple-use resource management objectives. Through management, vegetative diversity can be increased.

Uneven-aged timber management has a limited potential for widespread, long-term application because it conflicts with the natural even-aged ecosystems of the Forest. Maintaining plant and animal species diversity and a practical ability to deal with fuel accumulations are major problems associated with uneven-aged management in our local environment.

WATER

The Flathead National Forest provides approximately 7,000,000 acre-feet of water per year to the Columbia River drainage. Five major systems feed into the Flathead River drainage which eventually flows into the Columbia system. The chemical water quality of streams and rivers on the Forest is generally excellent. The water quality contaminant most commonly associated with land management is sediment. Compared to chemical characteristics, natural sediment is highly variable. This includes variability between watersheds and seasonally within a given watershed.

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* USDA - Forest Service. 1983. Silvicultural Systems for the Major Forest Types of the United States. Agriculture Handbook 445, Dec, 1983. Washington DC.

The Forest does not have the ability to greatly influence average annual water supply or values in comparison to natural variation. This is especially true when the majority of any man-caused variation would only minutely affect amount of water in excess of downstream storage capacity in the spring run-off.

In an effort to ensure that potential increases in water yield and sedimentation are acceptable and do not adversely impact uses of the Forest's water resource, "beneficial uses" of watersheds have been identified. The three categories are: public water supplies, fisheries, and other uses, including recreation and scenic values. Watersheds on the Forest have been grouped based on one or more of these beneficial uses.

Watersheds used as community water supplies will be managed according to FSM 2543.12 "Requirements for Municipal Watersheds." Watersheds used as noncommunity water supplies will be managed with best management practices under the State water quality classification for the watershed under all alternatives.

Continuation of current management would not adversely affect wilderness watersheds but would result in adverse effects on a significant number of nonwilderness watersheds throughout the Forest.

MINERALS

Mineral resource management requires the Forest Service to conform to Congressional mandates to make minerals from National Forest System land available and at the same time to minimize the adverse effects of mining activities on surface resources.

Minerals management on National Forest System lands requires interagency coordination and cooperation. Although the Forest Service is responsible for the management of the surface resources, the BLM (Bureau of Land Management) in the Department of the Interior is primarily responsible for management of Federal minerals.

The dominant mineral activity on the Forest is oil and gas leasing. Over 1,000,000 acres were leased or under lease application in 1984. A Federal court ruling in 1985 caused the BLM to suspend those leases until litigation is completed. Before action is recommended on any lease application, additional site-specific analysis of environmental effects will be done.

Each lease, when issued, includes numerous standard and special stipulations to minimize effects of oil and gas activities on surface resources. In almost all instances, oil and gas exploration, development, and production can occur without causing unacceptable effects to soil, water, timber, range, scenic, wildlife, cultural, and recreation values.

In rare situations where the oil and gas activity and the surface management are incompatible, the Federal Government can decide which resource will be the dominant use. The Forest Service makes recommendations on these matters; the final decisions are made by the BLM.

Hard rock mining and exploration is under the authority of the 1872 General Mining Law, which entitles the miner to do all reasonable and necessary activity to explore for and develop mineral resources. Forest Service control of these activities is through its surface mining regulations.

Currently there are about 50 to 100 unpatented mining claims on the Flathead National Forest. There are no known active mining operations, nor has any "Notice of Intent" been submitted for approval. No commercial ore deposits are known to exist on the Flathead National Forest. Since no commercial site deposits of hard rock minerals have been discovered on the Flathead National Forest over the last 70 years, it is anticipated that no mines will be developed in the immediate future.

Common variety minerals, such as gravel and common rock deposits, are extensively utilized for State, County, and Forest Service road construction and maintenance. About four mineral material permits (no charge) are issued to State and County agencies each year. The Forest Service uses about 12,000 tons of this type of material each year. No attempt has been made to estimate a dollar value for these materials.

Federal statute permits withdrawal of areas from appropriation, entry, or use for mining in order to protect certain surface resource values or Government improvements. About 38,800 acres of the Flathead National Forest are currently withdrawn. Congress withdrew 24,520 acres of that area by classifying portions of South and Middle Forks of the Flathead River as components of the National Wild and Scenic Rivers System. The remaining 13,265 acres were withdrawn to protect the Coram Experimental Forest and various other administrative and recreation sites. All of these withdrawals will be reviewed within 8 years for possible termination. The current policy is to terminate most of these kinds of withdrawals since the Forest Service's 1974 surface mining regulations protect Government improvements and special surface resources.

Current management direction established through the Unit Plans and District Multiple-Use Plans would result in a relatively unrestricted minerals management program.

PRESENTATION OF THE ALTERNATIVES

A. ALTERNATIVES CONSIDERED BUT ELIMINATED

All the alternatives considered comply with the NFMA regulations and can be implemented. Two departure alternatives to Alternative 8 were developed and eliminated from further detailed study. These schedules are discussed in the March 1983 Draft EIS, and are not discussed further. A third departure alternative is for the new Preferred Alternative (Alternative 17). It was developed, analyzed, and carried forward for comparison purposes.

NFMA regulations require that under certain conditions, a Forest should consider management alternatives that allow timber harvest schedules to "depart" from a nondeclining even flow of timber. Nondeclining even flow means that the timber harvest in a given decade is always equal to or greater than the previous decade's harvest.

The conditions that might necessitate consideration of a departure schedule include a need to significantly reduce or prevent high timber mortality losses from any cause, a need to improve the Forest's timber age class distribution, a need to moderate substantial adverse impacts on a local community that may result from implementation of the base harvest schedule, a need to provide a timber harvest schedule that achieves RPA Program goals if an alternative considered does not already provide for this, and a need to better attain overall multiple-use objectives. The ID team's analyses of the alternatives indicate that none of the conditions except the last--improved achievement of multiple-use objectives--apply to the Flathead National Forest at this time.*

The ID team and Forest Supervisor, after consultation with timber industry representatives and Northern Region Office staff, decided that a departure schedule for the Preferred Alternative may be desirable if it improved achievement of multiple-use objectives in one or both of the following ways: (1) improved PNV (present net value) of the Forest, and (2) provide additional timber volume to industry in the early decades of the planning horizon when a decline in harvest volume from private lands is expected to occur. The achievement of these objectives will improve attainment of multiple-use objectives in the area of community stability. To be of benefit to industry, the decline in timber volume would have to occur in later decades when production levels from private lands were increasing.

One departure analysis was made on the Preferred Alternative (Alternative 17). It retained the management emphasis and resource objectives of the Preferred Alternative; however, management intensities and the scheduling of management activities varied.

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* See documentation on departures considered in the Flathead National Forest planning records.

1. DEPARTURE OF ALTERNATIVE 17 (PREFERRED ALTERNATIVE)

This departure analysis was formulated to test the feasibility of increasing timber harvest in Decades 1 and 2 without unacceptable effects on other resources. Timber harvest was required to be at least 106 MMBF per year in the first decade, and 116 MMBF the second decade. Sequential bounds were used to link decade harvest levels. This departure analysis indicated the timber harvest objectives could be met without significant adverse effects on other resources in the first decade. A substantial portion of the increased timber volume, however, was made up of intermediate harvest the first two decades (5,900 acres in the departure analysis as compared to 4,600 in Alternative 17). The PNV of the departure was 439.4 million dollars, 43.6 million dollars less than the PNV of Alternative 17. Long-term sustained yield capacity for the departure was 11 MMBF less than in Alternative 17.

2. RATIONALE FOR ELIMINATING THE DEPARTURE SCHEDULE FROM FURTHER STUDY

The departure schedule is not recommended for further study because it does not appear to provide the opportunities to better attain multiple-use objectives at this time. The following discussion explains the rationale for eliminating the departure schedule from further study.

The departure schedule does provide for increases in timber volume at the time when yields from private timberlands are expected to decline. The additional volume, however, adds small diameter and low quality logs from intermediate harvests to an already substantial volume of small logs in the lodgepole pine harvest scheduled in the Preferred Alternative. Implementation of the departure would represent a 28 percent increase in intermediate harvest over the current program, requiring additional sales preparation personnel.

The departure schedule would reduce the PNV of Alternative 17 by 43.6 million dollars and decrease the sustained yield by 11 MMBF to provide the additional 3 MMBF in the first decade and 11 MMBF in the second decade. This increase in harvesting would only be temporary, however, as Decade 3 volumes would drop back down to 108 MMBF. This is due to the high levels of intermediate harvesting which requires more roads and high costs in Decades 1 and 2, which makes the stands more economical for harvesting after Decade 3 or 4 when their value peaks.

Harvesting the small diameter trees in the first two decades (about 16 MMBF more) substantially reduces the harvest in Decades 3 and 4 by 6 MMBF from Alternative 17.

The additional 3 MMBF of first decade timber volume associated with the departure would provide approximately 45 jobs in the three-county local zone of influence and approximately 0.6 million dollars in income additional to that provided through Alternative 17.

these sport fisheries in Flathead Lake. Four streams on the Forest contain essentially pure populations of westslope cutthroat trout.

Based on fish population counts and productivity modeling using habitat parameters, the Forest's waters are estimated to support about 1,500,000 trout and 350,000 whitefish (refer to Table II-2 for Catchable Trout - potential and existing numbers).

Lakes on the Forest generally have low productive capacity, supporting an average of about 50 fish per acre. Hungry Horse Reservoir has very low productive capacity. Available food and suitable rearing habitat are scarce due to fluctuating water levels and cold water. Some of the lakes have suitable spawning habitat; most require stocking to maintain fish populations.

Most trout populations in the lakes and rivers of the Flathead River drainage are dependent on tributary streams for spawning and rearing. Adult fish migrate from the lakes or rivers in the spring (cutthroat and rainbow trout), late summer (bull trout), or fall (eastern brook trout) to spawn in tributary streams. Flathead National Forest streams support about 53 percent of the Flathead River System's migratory fishery and are essential to maintaining sport fisheries throughout the Flathead River system.

Kokanee salmon from Flathead Lake use tributary streams for spawning, but most sites are not on Flathead National Forest lands. The salmon do, however, depend on high quality water provided in part by the Forest.

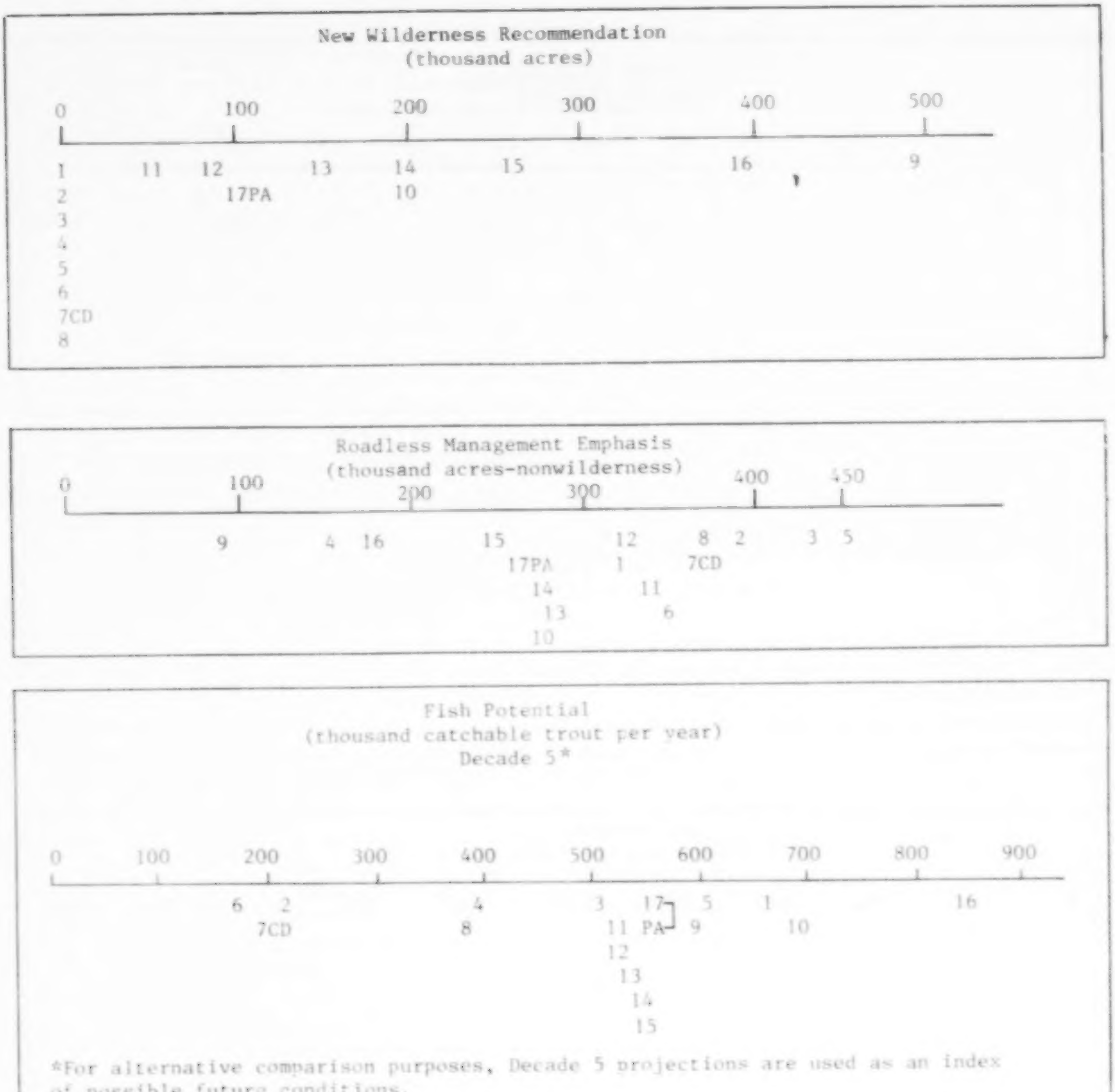
In 1980, the Forest provided about 89,000 recreation visitor days of fishing use. Fishing use is expected to increase commensurate with increases in recreational activities generally. Fishing pressure on some of the Forest's streams and lakes is causing resource damage and/or decreased fish populations.

b. Big Game

Flathead National Forest provides habitat for eight commonly hunted big-game species - elk, mule deer, whitetailed deer, moose, Rocky Mountain goat, grizzly bear, black bear, and cougar.

Estimated population levels for elk, mule deer, and whitetailed deer are 4,700, 3,400, and 5,300 respectively. Utilizable winter range forage is generally believed to be the factor limiting population growth.

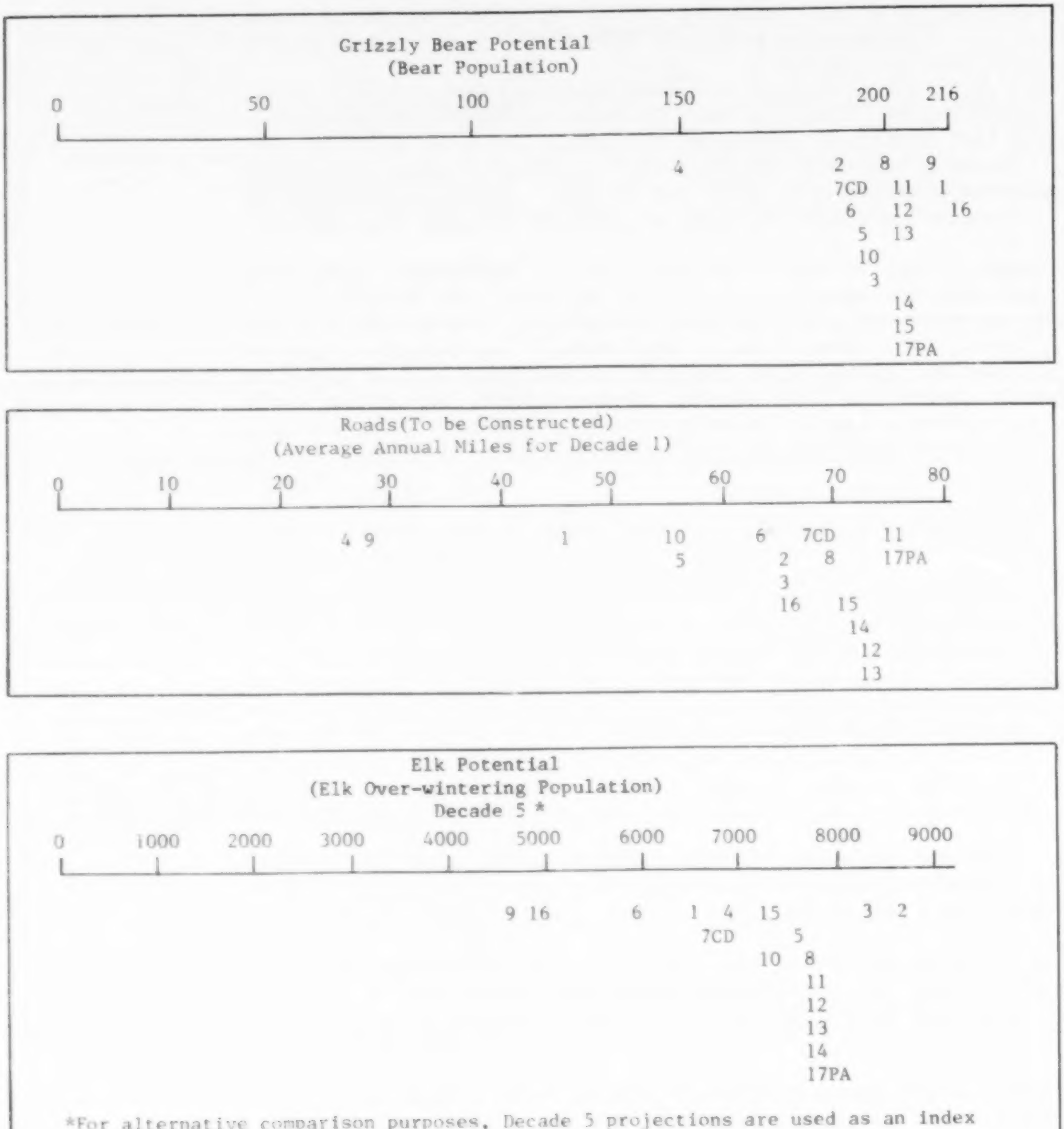
Not all the animals that inhabit Flathead National Forest lands in the spring, summer, and fall actually winter on Forest lands. Table III-5 displays, by Ranger District, the percentages of elk, mule deer, and whitetailed deer winter ranges that occur on National Forest System and State and private lands.



*For alternative comparison purposes, Decade 5 projections are used as an index of possible future conditions.

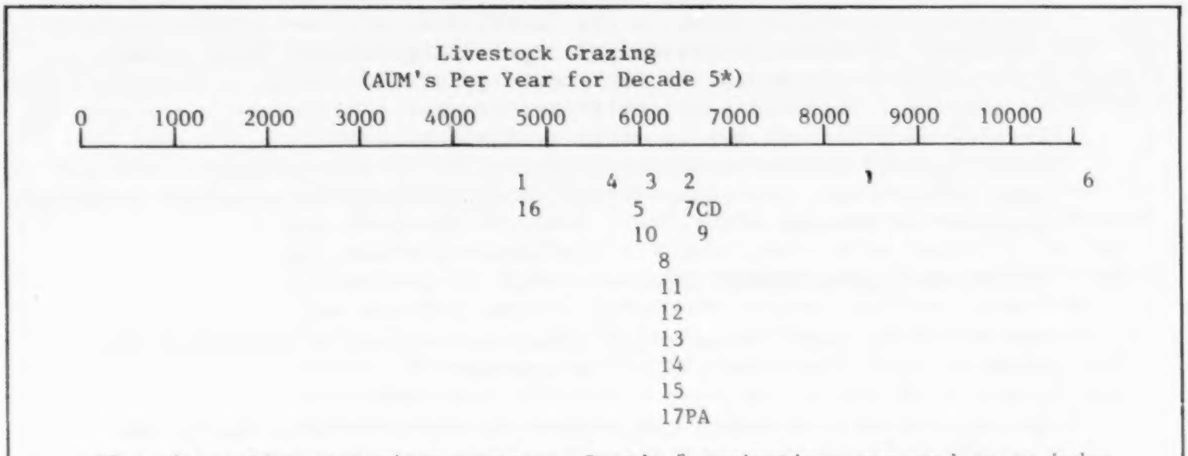
Figure II-1. Range of Alternatives' Responsiveness to Major Issues.

Flathead National Forest



*For alternative comparison purposes, Decade 5 projections are used as an index of possible future conditions.

Figure II-1. (cont.)



*For alternative comparison purposes, Decade 5 projections are used as an index of possible future conditions.

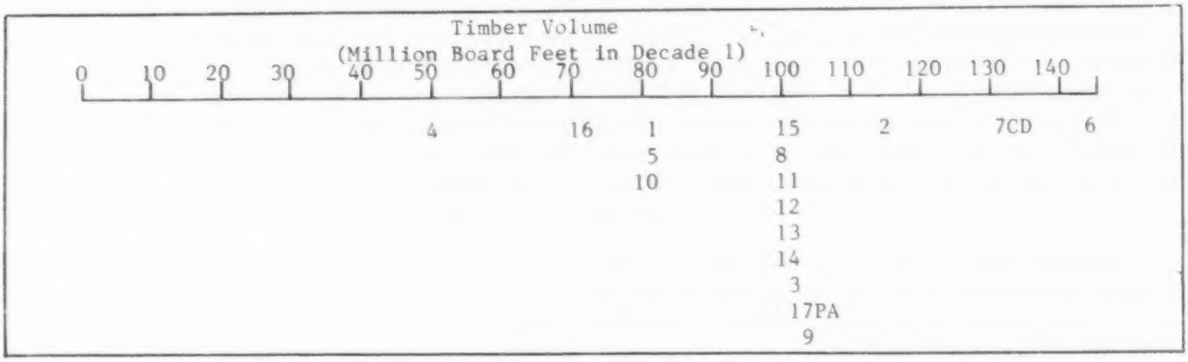


Figure II-1. (cont.)

2. CONSTRAINTS USED TO DEVELOP ALTERNATIVES

The FORPLAN model was used in developing each alternative. The objectives to be achieved by each alternative were modeled by placing constraints within the FORPLAN model. Constraints were not modified between the draft and final documents. While each alternative carries somewhat of a unique theme, a few constraints are used consistently to represent the Forest situation of legal obligations. These common constraints are the same as the common constraints used to formulate the benchmarks summarized earlier in this chapter. All constraints used to develop alternatives are the same as the common constraints used to formulate the benchmarks summarized earlier in this chapter. All constraints used to develop alternatives are also discussed in detail in Appendix B, Section VII-B.

3. DESCRIPTION OF ALTERNATIVES

The following pages present the management direction statement and resource objectives for each alternative.

The alternatives are then compared on an issue by issue basis and followed by Table II-18 which presents the resource production levels of each alternative for Decades 1-5, 10, and 15 in a comparative display. The schedules of resource production levels, projected for 150 years (15 decades), for all alternatives are detailed in Appendix B.

ALTERNATIVE 1

a. Management Direction

The "Social and Economic Overview" (Giannettino, 1981) and public involvement indicate that some people believe:

> The National Forest System was established to ensure that the Nation's forest lands and resources are used in multiple ways, yet are used conservatively. The Forest's primary management objectives should encourage land uses that protect basic productivity and maintain the greatest number of future management options for the American people. Forests such as the Flathead National Forest with unique or scarce resources of national significance should place high priority on the protection of those resources. Extractive uses will continue to occur but must be carefully weighed against long-term social, economic, biological, and physical environmental costs. Nonextractive use of the Forest will be emphasized. This management direction best serves the interests of local communities and the Nation because it ensures continued resource reserves and maintains management options for future generations.

b. Resource Objectives

The ID team translated the above statement into the following resource objectives:

This alternative focuses on "amenity resources." It places emphasis on maintenance of 322,000 acres of prime grizzly bear habitat, requiring motorized access restrictions, prescribed burning, and some carefully designated timber harvest to maintain the best relationship of cover to forage. The alternative provides one of the best opportunities for the Forest to contribute to the Northern Continental Divide Ecosystem objective for a recovered population of grizzly bears by providing and maintaining habitat to support approximately 215 bears. The gray wolf population also is expected to increase in this alternative.

Alternative 1 maintains - of all the alternatives - the twelfth largest proportion of existing roadless areas in a roadless state, without regulated timber harvest. These acres are maintained either through management for roadless dispersed recreation or for other amenity values such as old-growth habitat, water quality, visual quality, or habitat for nongame species. Some existing roadless acres are managed for grizzly bear habitat and could be roaded to accomplish habitat management objectives. These roads would be closed after they had been used to access the area. There would be no additions to the National Wilderness Preservation System.

More funding is available for management of the three wildernesses to allow for protection of the wilderness resource and mitigation of the impacts associated with recreational use. Trail maintenance and visitor information are improved. For similar reasons, the Flathead Wild and Scenic River, Jewel Basin Hiking Area, and campgrounds and picnic areas that evidence resource damage are managed with higher funding levels.

Big-game populations are of concern in this alternative; however, opportunities to manipulate the vegetation to achieve an optimal cover/forage ratio are limited by conflicts in some areas with management of grizzly bear habitat. Thus, the Forest's potential to support big-game populations is reduced, and is fourth lowest of all the alternatives by the fifth decade.

Wildlife habitat management is emphasized in all riparian areas. This alternative strives to maintain high quality water and low sediment levels.

Commodity resource development is not highlighted in this alternative. Timber harvest provides an annual harvest of 82 MMBF in the first decade, fourth lowest of all the alternatives. The harvest level results from primary consideration being given to amenity resources. Permitted domestic livestock use is the lowest of all alternatives. This alternative's resource management objectives and land assignments through restriction by special stipulation imposes a high amount of restrictions on oil and gas access and activities.

In the range of alternatives considered, Alternative 1 provides one of the best opportunities to attain a recovered population of grizzly bears, high quality water, quality recreational fisheries, and acres that provide old growth. This alternative allows the least livestock grazing and has the fourth lowest long-term sustained yield capacity.

ALTERNATIVE 2

a. Management Direction

The "Social and Economic Overview" (Giannettino, 1981) and public involvement indicates that some people believe:

> The National Forest System was established to protect the public's right to use and develop forested lands and Forest resources. The public should have access to Forest products and services. Therefore, the Forest's primary objectives should ensure maximum multiple use of the land and resources while maintaining the land's basic productivity. Resources and the land are to be used and not wasted. The Forests need to contribute their share in the Nation's efforts to attain self-sufficiency in wood and energy-related resources. The Forests also need to recognize the recreation needs of the American people. Therefore, development of opportunities for the use of all resources will be the Flathead National Forest's objective. Intensive and comprehensive development of the Forest's resources will contribute to progress - not only for the Nation but for local communities as well.

b. Resource Objectives

The ID team translated the above statement into the following resource objectives:

This alternative focuses on the use of National Forest System lands and on resource development. It provides for high levels of commodity resource extraction; however, development of the Forest's resources is limited by concern for amenity resources. In this alternative, there are few restrictions on the people's right to use National Forest System lands. Recreation as an important use of the Forest receives emphasis; however, land managed to provide roadless recreation opportunities generally is that land unsuitable for timber production. The National Wilderness Preservation System would not be increased.

This alternative's resource management objectives and land assignments through restriction by special stipulation imposes a relatively low amount of restrictions on oil and gas access and activities.

Timber harvest in this alternative is about 116 MMBF per year for the first decade, increasing to 177 MMBF by the fifth decade. This alternative eventually meets the Forest's 1980 RPA Program objectives for timber. Long-term sustained yield capacity is second to the highest of all the alternatives.

The average annual harvest volume in the first decade is limited by concerns for the impacts of harvesting on water quality. Still, some adverse effects on water quality will occur as a result of the timber harvest and road construction.

Permitted livestock use in this alternative is slightly higher than the existing level, second highest of all the alternatives, providing ranchers the opportunity to use National Forest System land for grazing.

Recreation management objectives emphasize well-used areas. Thus, campgrounds and picnic areas that receive high amounts of use are managed more intensively to improve the quality of the recreational experience. The Mission Mountains Wilderness and the South Fork of the Bob Marshall Wilderness are managed with more funding available for trail maintenance and trailhead facilities in recognition of the high use levels. Dispersed roadless recreation opportunities are provided throughout the Forest; however, areas emphasized are those that provide quality active recreation while not withdrawing potentially suitable timber land from production. This alternative has one of the least restrictive road closure programs, affording the Forest user a high level of motorized access.

Big-game winter range receives a high level of emphasis in this alternative with the objective of providing an ample huntable population to meet expected future hunting demand. Motorized access for hunting and fishing opportunities, however, is high, with the potential for adversely affecting hunting quality.

In the range of alternatives, Alternative 2 provides winter range forage to support the largest mule deer, elk, and whitetailed deer populations by the fifth decade. The timber harvest activities and road construction associated with this alternative have an adverse affect on the Forest's nonwilderness stream trout population. This alternative has the second highest long-term sustained yield capacity and the third highest first decade harvest.

ALTERNATIVE 3

a. Management Direction

The "Social and Economic Overview" (Giannettino, 1981) and public involvement indicate that some people believe:

> The National Forests' multiple-use management philosophy requires maintenance of basic land productivity, yet also allows coordination of Forest management activities with national and local land use trends in a manner consistent with the Forest's ability to supply products and services. The national need for recreational opportunities has greatly increased, with the focus on activities that are low in energy consumption. This national trend and a changing, growing, more recreation-oriented population have increased the importance of the recreation and tourism industry in this area. The national demand for wood products, however, will continue, and the wood products industry will continue to play an important role in the local economy. The Forest should respond to increasing national and local demands for outdoor recreation yet also recognize the importance of timber in the local economy.

The ID team translated this statement into the following objectives.

b. Resource Objectives

The goal of this alternative is to provide a level of timber harvest to local mills that is consistent with recent levels, while at the same time responding to the growing recreational use of the Flathead Valley. This alternative recognizes the visual setting the Forest creates for recreation both on and off the National Forest System lands.

The timber harvest of 101 MMBF a year for the first decade is consistent with the Flathead National Forest's timber harvest level of the past 5 years. This first decade harvest is fifth highest of all the alternatives. The base sale schedule increases from that level, so that by the third decade the Forest's harvest level would be 129 MMBF per year, when a downfall in timber supply from private lands is anticipated. The long-term sustained yield capacity for the Forest is projected to be slightly more than under Current Direction, and fourth highest of the alternatives considered.

This alternative's resource management objectives and land assignments through restriction by special stipulation imposes a moderate amount of restrictions on oil and gas access and activities.

This alternative places the greatest emphasis on recreation. All types of recreation opportunities are emphasized. The wildernesses, Jewel Basin Hiking Area, and the Flathead Wild and Scenic River are intensively managed with higher funding so that high quality recreation experiences can be provided. There would be no additions to existing wildernesses. All developed campgrounds and picnic areas are managed at a "full-service" level, an increase in maintenance level over the existing situation. Total acres managed to provide roadless recreation are the highest of all the alternatives except Alternative 5. The quality of the roadless recreation opportunities available in this alternative exceeds Current Direction because more funding would be available for trail maintenance, trailhead facilities, and visitor information. Although some roadless dispersed recreation areas are potentially suitable for timber management, the majority are not capable of timber production. Thus potential competition between providing recreation opportunities and timber volume is minimized.

Under this alternative, there is the potential to achieve large elk, mule deer, and whitetailed deer populations to meet high levels of recreationist use including hunting and photography. Motorized access to the Forest is moderately restricted. Important fisheries streams are managed to protect fish habitat. About 38,000 acres of the Forest are managed to improve grizzly bear habitat.

Because a significant portion of the Forest is frequently viewed by recreationists pursuing activities both on and off the Forest, this alternative focuses on maintaining a pleasant setting. Timber harvest activities are allowed to occur in frequently seen areas; however, they are designed to minimize the impact on the view.

In the range of alternatives, Alternative 3 provides the best roadless dispersed recreation opportunities and highest visual quality objectives. This alternative would, by the fifth decade, provide big-game winter habitat to support the second largest population of mule deer, elk, and whitetailed deer of all the alternatives.

ALTERNATIVE 4

a. Management Direction

The "Social and Economic Overview" (Giannettino, 1981) and public involvement indicate that some people believe:

> The National Forest System was established to ensure effective and efficient use of Forest lands and resources. To achieve this goal, Flathead National Forest management should be as similar as possible to that of a business. Economic principles should receive highest priority in management decisions about the emphasis given to resources and specific management activities. Forest products and services that do not contribute monies to the Federal Treasury will receive limited management emphasis. Existing Federal laws, regulations, and policies will ensure that Forest management is within multiple-use guidelines. In addition, the productive capability of the land should be considered in determining resource management emphasis, with resources intensively managed only on the most suitable lands. Commodity resources will be managed and extracted where it is cost-effective to do so. Businesslike management will benefit the public by increasing efficiency and minimizing management costs.

The ID team translated this statement into the following resource objectives.

b. Resource Objectives

This alternative has resource objectives designed to provide the greatest amount of revenue for the least cost. Commodity resources management is guided primarily by economic criteria. Management for resources that do not produce revenue is minimal.

This alternative schedules timber harvest to ensure that maximum value is returned to the Federal Treasury. Therefore, because of the existing timber age class distribution and higher value associated with larger diameter timber on the Forest, much of the harvest is delayed until the third decade. The average annual programed harvest of timber for the first decade is the lowest of all the alternatives - 51 MMBF; but by Decade 3, it is 151 MMBF. Long-term sustained yield capacity is third highest of all the alternatives. Viewing quality is not emphasized because maintenance of a pleasing landscape increases management costs.

Only in this alternative are all the wildernesses, the Flathead Wild and Scenic River, and Jewel Basin Hiking Area managed at low levels of funding. This is because these land designations do not provide any significant economic return to the Federal Treasury. Existing wilderness would not be expanded.

This alternative attempts to minimize economic losses related to developed site (campground and picnic area) use by managing intensively only those sites where user fees could be charged or where high amounts of use occur and a favorable benefit/cost relationship exists. This alternative would close more sites than any other alternative.

Investment of funds for management of roadless dispersed recreation occurs only in those areas currently receiving high levels of recreation use. This alternative provides the least amount of managed roadless recreation opportunities on the fewest acres.

Lands that are not capable of timber production are managed with minimum investment unless they are high use recreation areas and managed for dispersed recreation opportunities.

This alternative's resource management objectives and land assignments through restriction by special stipulation imposes the lowest amount of restrictions on oil and gas access and activities of all the alternatives.

Considering the range of alternatives, Alternative 4 provides the lowest developed and roadless dispersed recreation opportunities and would assure roadless management for the fewest acres. Timber harvest in the first decade would be the lowest of all the alternatives but the long-term sustained yield capacity would be third highest. Minimum management of Forest lands would occur on more acres than under any other alternative.

ALTERNATIVE 5

a. Management Direction

A coalition of local special interest groups indicated that some people believe:

> The National Forests should be viewed as unique public lands with a public trust to preserve that uniqueness as well as a source of commodities for commercial use. Economic sense should be used when producing commodities. More importantly, management should be based on the conservation and maintenance of soil, air, and water. Because mankind is only beginning to understand the interrelationships of our natural resources and the effects which they have upon one another, "careful caretaking" must be the watchwords of Forest managers. One resource value should not be unwittingly enhanced to the detriment of other resource values. All renewable resources of the Forest, including fish, wildlife, watershed, timber, recreation, and wildlands must be managed on a sustained yield basis.*

The ID team, working with representatives of these groups, developed the following resource objectives.

b. Resource Objectives

This Alternative highlights protection of the pristine environment where roadless and/or wildlife values are believed to be highly significant. Timber production and resource extraction is concentrated on other portions of the Forest in recognition of the importance of the timber industry in the local economy.

Those areas with identified amenity resource values are protected from development in this alternative. The Swan Mountain Range, the Le Beau area of the Tally Lake Ranger District, and the roadless portions of the Spotted Bear Ranger District are managed for primitive nonmotorized recreation, watershed protection, wildlife, and other amenity resources. No additions to the National Wilderness Preservation System would be made at this time, but future options would be preserved.

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* This alternative was developed by a coalition of local residents and conservation organizations that included Flathead Back Country Horsemen, Flathead Audubon Society, Flathead Chapter of the Montana Wilderness Assn., Citizens of the Upper Swan Valley, Flathead Wildlife, Inc., and the local chapter of the League of Women Voters. The background documents prepared by this coalition are available in the planning records. In addition, the roadless north end portion of the Glacier View Ranger District remains roadless, with primary management emphasis placed on primitive recreation opportunities and wildlife. Special attention is given to the grizzly bear and gray wolf in this area. Preservation of habitat is the management direction as opposed to habitat manipulation. Logging in the north end is allowed from existing roads.

These roadless management designations provide the most acreage managed to provide "primitive" dispersed recreation opportunities and the most acreage managed for amenity resources such as water quality, old growth, and nongame species habitat.

All riparian area management emphasizes wildlife and fisheries habitat. All big-game winter range is sustained at 95 to 100 percent of optimum with high levels of investment in habitat improvement. Long-term potential elk, mule deer, and whitetailed deer populations are the highest of all the alternatives.

The suitable timberland in this alternative consists of fewer acres than most other alternatives. This is because of primary consideration being given to amenity resources. Long-term sustained yield capacity is fourth lowest among the alternatives. Average annual timber harvest levels for the first five decades correspond closely to Alternative 1. Decade 1 average annual harvest is 82 MMBF. Timber management is concentrated on the more productive sites, where other resource values were not identified to be significant.

This alternative's resource management objectives and land assignments through restriction by special stipulation imposes a moderately high amount of restrictions on oil and gas access and activities.

Considering the range of alternatives, Alternative 5 maintains the second highest level of old-growth habitat on the Forest and in time will provide the best big-game winter range habitat. Of all the alternatives, this designates the most acres as roadless management emphasis, including amenity values, dispersed recreation, and roadless timber management objectives. This alternative has the fourth smallest suitable timberland base and the fourth lowest long-term sustained yield capacity.

ALTERNATIVE 6

a. Management Direction

In an effort to broaden the array of alternatives, the ID team determined that some people believe:

> The National Forests should explore the compatibility among resource uses, such as timber, recreation, and range. Management designed to serve single-use amenity objectives should receive less emphasis than commodity management that focuses on making direct economic contributions to the Nation's economy and Federal Government. Resources should be wisely used to meet public needs. Resource preservation and withdrawals from development activities will be made where justified by the relative values involved.

The ID team translated this statement into the following resource management objectives.

b. Resource Objectives

The goal of this alternative is to maximize the present net value of the Forest, while achieving high commodity resource production levels for all resource uses and products from the Forest. Resources are managed as intensively as possible. Recreation management is designed to not conflict with management of commodity resources.

This alternative meets direction in the "Revised President's Statement of Policy" which states that "at least one alternative in the DEIS will be developed to determine how the 1980 RPA (Forest and Rangeland Renewable Resources Planning Act) program could best be implemented on the Forest. National demand for Forest resources are reflected in the RPA output objectives assigned to the Forest through the Northern Region Plan."

This alternative's resource management objectives and land assignments through restriction by special stipulation imposes a low amount of restrictions on oil and gas access and activities.

Timber harvest levels in this alternative are highest of all the alternatives and exceed RPA objectives. Average annual harvest for the first decade is 145 MMBF. The long-term sustained yield capacity of the Forest is 186 MMBF. Of all the alternatives, this alternative most closely approaches the timber harvest levels of the timber benchmark.

Grazing opportunities on the Forest are maximized as all potentially suitable transitory range is considered in calculating available livestock AUM's. This results in some very small and inaccessible allotments; however, in this alternative, they would be available to permittees. Potential AUM's only meet 51 percent of RPA objectives, even under this alternative which focuses on providing the highest level of grazing forage production of all the alternatives.

The high timber and grazing production levels of this alternative limit management opportunities for wildlife, fisheries, and water quality.

Hunting quality is not highlighted in this alternative. This is because management of winter ranges is not emphasized and forage production is low.

A sufficient quantity of recreation opportunities are provided on the nonproductive Forest lands by managing with high levels of investment to maintain trails and trailhead facilities, and disperse visitors through information services. While a significant portion of the Forest's highest quality roadless recreation potential occurs on lands not capable of timber production, some high quality areas are potentially suitable. This alternative designates these areas as timber management, foregoing the roadless recreation management opportunity.

In compensation, the wildernesses, the Flathead Wild and Scenic River, and Jewel Basin Hiking Area are managed to maximize the ability of these areas to absorb recreational use. The National Wilderness Preservation System would not be expanded.

Alternative 6, in terms of the range of alternatives, has the highest long-term sustained yield capacity and first decade timber harvest level. Permitted livestock grazing would also be highest of all the alternatives. Acres managed with roadless management objectives and the potential big-game populations would be the lowest of all the alternatives. Visual quality objectives are also lowest in the range of alternatives considered.

CURRENT DIRECTION ALTERNATIVE 7

a. Management Direction

Current Direction (Alternative 7) continues the management direction provided by the Ranger District Multiple-Use Plans and the Unit Plans developed for portions of the Forest. Since these plans were put into effect, legal changes have altered management direction in the following ways:

The Great Bear Wilderness was added to the National Wilderness Preservation System.

The South, Middle, and North Forks of the Flathead River were designated part of the Wild and Scenic River System.

Some land adjustments have been made to meet multiple-use land management objectives.

In addition, the rapidly growing body of knowledge upon which management is based has made it possible to determine land capability more accurately.

b. Resource Objectives

This alternative produces a relatively high level of timber volume compared to the other alternatives. The average annual first decade harvest is 132 MMBF, and long-term sustained yield capacity is 165 MMBF. Timber management objectives specified in existing direction call for significantly more planting, precommercial thinning, and intermediate harvest than other alternatives. Existing direction schedules most timber harvest on elevations with slopes less than 40 percent, continuing the disproportionate level of cutting in these areas. This results in adverse impacts on water quality and fisheries in some areas. Also implied by Current Direction are lower logging and management costs than under other alternatives.

This alternative places a moderate level of management emphasis on big-game winter range, with approximately 50 percent of potential winter ranges managed to provide utilizable forage. Although existing land designations provide for 35,000 acres to be managed for maintenance of grizzly bear habitat, the Forest's total potential to achieve a recovered population would be low in this alternative.

Current Direction embodies a hodgepodge of existing management direction for recreation. The Mission Mountains Wilderness Management Plan specifies a high level of investment and management for that area, including trail maintenance and visitor information. The lack of specific direction for the Bob Marshall and Great Bear Wildernesses and historically low funding level imply low levels of management for these areas. Existing wilderness areas would be retained with no additions.

Total nonwilderness acreage managed for roadless dispersed recreation opportunities appears high relative to other alternatives. Funding levels are low, however, meaning that fewer recreation opportunities could be managed on those acres than if investment in trails, maintenance, visitor information, and other activities were high. The funding for maintenance of developed campgrounds and picnic grounds is minimal.

This alternative's resource management objectives and land assignments through restriction by special stipulation imposes a relatively low amount of restrictions on oil and gas access and activities.

Considering the range of alternatives, Current Direction provides the second highest first decade timber harvest but the third lowest long-term sustained yield capacity. Winter range forage production is high in the first two decades but second lowest of the alternatives for the remainder of the planning horizon. Old-growth habitat is maintained on the fewest acres. Current Direction provides the least management funding for developed and dispersed recreation. Some critical viewing areas are not protected, such as the Noisy Face area in the Swan Range.

ALTERNATIVE 8

a. Management Direction

The "Social and Economic Overview" (Giannettino, 1981) and public involvement indicate that some people believe:

> The National Forests' multiple-use management philosophy requires maintenance of basic land productivity, yet also allows coordination of Forest management activities with national and local land use trends in a manner consistent with the Forest's ability to supply products and services. The national need for recreational opportunities has greatly increased, with the focus on activities that are low in energy consumption. This national trend and a changing, growing, more recreation-oriented population have increased the importance of recreation and tourism industry in this area. The national demand for wood products, however, will continue, and the wood products industry will continue to play an important role in the local economy. The Forest should respond to increasing national and local demands for outdoor recreation yet also recognize the importance of timber in the local economy.

b. Resource Objectives

This direction statement also defined the management objectives for Alternative 3. Following the analyses of the alternatives, the ID team developed a modified set of resource objectives. The objectives of this alternative provide a slightly different interpretation of the management direction statement presented above. Like Alternative 3, the goal of this alternative is to provide a level of timber harvest to area mills that is consistent with recent volume levels while at the same time responding to the growing recreational orientation of the Flathead area. The first decade timber harvest level is 100 MMBF, increasing by the third decade to 127 MMBF. The long-term sustained yield capacity is slightly more than under Current Direction.

All types of recreation opportunities are emphasized, as in Alternative 3. The wildernesses, Jewel Basin Hiking Area, and the Flathead Wild and Scenic River would be managed with higher levels of investment in trail maintenance, access sites, trailhead facilities, and visitor information. All public campgrounds and picnic areas would be managed with increased investment so high quality developed recreation opportunities are available. Acres managed to provide roadless dispersed recreation are fewer than under Alternative 3. This alternative focuses on management of areas where high roadless recreation values have been identified.

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As in Alternative 3, a large proportion of areas designated as roadless dispersed recreation management are considered unsuitable for timber production. Therefore, potential competition between providing recreation opportunities and timber volume are minimized. Funding for maintenance of trails and trailhead facilities, visitor services, and trail and facility construction is high. There would be no additions to the National Wilderness Preservation System.

This alternative would provide potential elk, mule deer, and whitetailed deer habitat which exceeds that provided in Alternative 3. Maximum forage production, however, would take longer to achieve. Road access to the Forest would be slightly more restricted. Important fisheries streams would be managed to protect and improve fisheries habitat. About 94,000 acres of the Forest would be managed to improve grizzly bear habitat, emphasizing a recovered population. This alternative attempts to maintain a pleasant setting for recreationists and residents in the Flathead area; however, fewer acres would be managed to minimize the impact of timber harvest on viewing quality than under Alternative 3. This reduces the costs of timber management and increases the PNV of the Forest.

This alternative's resource management objectives and land assignments through restrictions by special stipulations imposes a moderate amount of restrictions on oil and gas access and activities.

This Alternative lies close to Alternative 3 in the range of alternatives. It provides the third highest roadless dispersed recreation opportunities and the second highest visual quality objectives.

ALTERNATIVE 9

a. Management Direction

This alternative was developed from the Maximum Wilderness Benchmark.

Alternative 9 emphasizes the wilderness resource on the Flathead National Forest. All 495,000 acres of roadless area are designated as wilderness. Other resources are managed in a cost-effective manner. This alternative was studied in detail as a point of comparison with the other alternatives, and to display the consequences of all roadless areas designated as a wilderness designation.

b. Resource Objectives

This alternative has resource objectives designed to maximize the wilderness resource, and to provide the greatest amount of revenue for the least cost. Commodity resources management is guided primarily by economic criteria. Management for resources that do not produce revenue outside wilderness is minimal.

This alternative schedules timber harvest to ensure that maximum value is returned to the Federal Treasury. Therefore, because of the existing timber age class distribution and higher value associated with larger diameter timber on the Forest, much of the harvest is delayed until the fifth decade. Viewing quality is not emphasized because maintenance of a pleasing landscape increases management costs.

This alternative attempts to minimize economic losses related to developed site (campground and picnic area) use by managing intensively only those sites where user fees could be charged or where high amounts of use occur and a favorable benefit/cost relationship exists.

Investment of funds for management of roadless dispersed recreation occurs primarily in those areas which are not capable of timber management and less than 5,000 acres in size. Over 67 percent of the Forest would be classified as wilderness, the most of any alternative. All existing contiguous roadless areas of 5,000 acres or more are designated wilderness.

This alternative's resource management objectives and land assignments through restriction by special stipulation imposes a high amount of restrictions on oil and gas access and activities.

Considering the range of alternatives, Alternative 9 provides the most acres for wilderness management and the fewest acres suitable for timber harvest. Timber harvest fluctuates over time because the nondeclining yield constraint is not used. Long-term sustained yield is the lowest of any alternative. Fewer acres of big-game winter range are managed to produce browse than any other alternative. Alternative 9 provides potential for grizzly bear habitat for 212 bears, third highest among the alternatives as a result of the extensive security provided by wilderness.

ALTERNATIVE 10

a. Management Direction

This alternative is based on Alternative 5 of the original DEIS developed by a coalition of local residents and conservation organizations.* Under Alternative 5, roadless and/or wildlife values are highly significant and are protected from development. Adding to this, the same coalition feels that managing for protection of the pristine environment can best be accomplished by designating as wilderness those roadless areas, mapped and described by the group as, "What constitutes the very best of the last of our remaining Montana wildlands."*

The National Forests should be viewed as unique public lands with a public trust to preserve that uniqueness as well as a source of commodities for commercial use. Economic sense should be used when producing commodities. More important, management should be based on the conservation and maintenance of soil, air, and water. Because mankind is only beginning to understand the interrelationships of our natural resources and the effects which they have upon one another, "careful caretaking" must be the watchwords of Forest managers. One resource value should not be unwittingly enhanced to the detriment of other resource values. All renewable resources of the Forest, including fish, wildlife, watershed, timber, recreation, and wildlands must be managed on a sustained yield basis.*

The ID team, working with representatives of these groups, developed the following resource objectives.

b. Resource Objectives

Wilderness will be recommended for pristine areas where roadless and wildlife values are high. Timber production and resource extraction are concentrated in other portions of the Forest because of the importance of the timber industry in the local economy.

This alternative's resource management objectives and land assignments through restrictions by special stipulation imposes a moderately high amount of restrictions on oil and gas access and activities.

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* Refer to Forest planning records, "Alternative W" by Montana Wilderness Association.

Those areas managed as wilderness are the Swan Range and the north end of Glacier View District. In addition, the Le Beau area of the Tally Lake Ranger District and the roadless portions of the Spotted Bear Ranger District are managed for primitive recreation, water protection, and wildlife. This alternative provides a large amount of acreage for primitive recreation, old growth, and nongame species habitat.

All riparian area management emphasizes wildlife and fisheries habitat. All big-game winter range acres are sustained at 95 to 100 percent of maximum potential with high levels of investment in habitat improvement. Long-term potential elk, mule deer, and whitetailed deer populations are the highest of all the alternatives.

The suitable timberland in this alternative is third lowest of all alternatives. This is because of primary consideration being given to amenity resources. Long-term sustained yield capacity is less than most other alternatives. Average annual timber harvest levels for the first five decades correspond closely to Alternative 1. Decade 1 average annual harvest is 80 MMBF. Timber management is concentrated on the more productive sites and where other resource values are not significant.

Considering the range of alternatives, Alternative 10 maintains a high level of old-growth habitat on the Forest and in time would provide the best big-game winter range habitat. It emphasizes roadless management and amenity resources. About 40 percent of the existing roadless areas would be recommended for wilderness. This alternative has a small suitable timberland base and a low long-term sustained yield capacity.

ALTERNATIVE 11

a. Management Direction

The "Social and Economic Overview" (Giannettino, 1981) and public involvement indicate that some people believe:

> The National Forests' multiple-use management philosophy requires maintenance of basic land productivity, yet also allows coordination of Forest management activities with national and local land use trends in a manner consistent with the Forest's ability to supply products and services. The national need for recreational opportunities has greatly increased, with the focus on activities that are low in energy consumption. This national trend and a changing, growing, more recreation-oriented population have increased the importance of the recreation and tourism industry in this area. The national demand for wood products, however, will continue, and the wood products industry will continue to play an important role in the local economy. The Forest should respond to increasing national and local demands for outdoor recreation yet also recognize the importance of timber in the local economy.

b. Resource Objectives

Alternative 11 has the same objectives as Alternative 8 along with an additional objective for adding to the Bob Marshall Wilderness. The ID Team recommended that additions to the Bob Marshall Wilderness should include the roadless area portions with the highest quality wilderness attributes and the most manageable boundaries.

The recommended wilderness additions include 5,187 acres in the Limestone Cave area of the East South Fork roadless area and 43,667 acres in the Swan Front area. The extensive Limestone Caves penetrate cliffs that are part of the Limestone Wall formation in the Bob Marshall Wilderness. The portion of the Swan Front proposed as a wilderness addition is adjacent to the western boundary of the Bob Marshall Wilderness. It includes some of the most impressive drainages of the Swan Range. Other commodity and noncommodity objectives remain the same as Alternative 8. The goal of this alternative is to provide a level of timber harvest to area mills that is consistent with recent volume levels while at the same time responding to the growing recreational orientation of the Flathead area. The first decade timber harvest level is 100 MMBF, increasing by the fifth decade to 157 MMBF. The long-term sustained yield capacity (164 MMBF/yr.) is slightly less than Current Direction (165 MMBF/yr.)

This alternative's resource management objectives and land assignments through restriction by special stipulation imposes a moderate amount of restrictions on oil and gas access and activities.

All types of recreation opportunities are emphasized. The wildernesses and the Flathead Wild and Scenic River would be managed with higher levels of investment in trail maintenance, access sites, trailhead facilities, and visitor information. Alternative 11 adds the highest quality area to the existing Bob Marshall-Great Bear-Scapegoat Wilderness Complex. Fewer acres are managed for roadless recreation than under Alternative 8. High quality developed recreation opportunities would be available because of increased investment in recreation facilities. This alternative focuses on balanced multiple-use management, and the addition of areas with high wilderness values and manageable boundaries. A large proportion of areas designated as roadless dispersed recreation management are not capable of timber production. Therefore, potential competition between providing recreation opportunities and timber volume are minimized. Funding for maintenance of trails and trailhead facilities, visitor services, and trail and facility construction is high. This alternative would provide potential elk, mule deer, and whitetailed deer habitat at the same level as Alternative 8. Important fisheries streams would be managed to protect and improve fisheries habitat.

As an objective of this alternative, 94,197 acres of key grizzly bear habitat would be managed with the grizzly bear as the primary management emphasis. Approximately 61,000 acres of this area, would be administratively classified as the Trail Creek Grizzly Bear Management Area.* This would be the Nation's first grizzly bear management area. The Trail Creek area contains the finest known grizzly bear habitat in the Northern Continental Divide Ecosystem and all management activities would be oriented towards maintaining or improving grizzly bear habitat. Grizzly bear research would be focused in this area toward providing more baseline data. Subsequent research would study the grizzly bear's reaction to project activity. In order to better assure grizzly bear security, no timber harvesting would be scheduled for the first decade. The unleased portion of the area would be proposed for withdrawal from mineral entry subject to valid existing rights for the first decade. Other existing and historic uses such as seismic surveys, woodcutting, and recreational use would be monitored to assure no adverse impacts to the grizzly bear.

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* Refer to Management Area 11 and the Trail Creek Geographic Unit Map in the Forest Plan.

The Frozen Lake Road would be closed year-long to public use and additional road closures may be implemented if conflicts with grizzly management develop. This added security would contribute to both grizzly bear and gray wolf recovery. Furbearers and nongame species are maintained at levels comparable to Alternative 8.

Alternative 11 would recommend 10 percent of the existing roadless areas to wilderness while maintaining timber harvest near present levels.

ALTERNATIVE 12

a. Management Direction

The "Social and Economic Overview" (Giannettino, 1981) and public involvement indicate that some people believe:

> The National Forests' multiple-use management philosophy requires maintenance of basic land productivity, yet also allows coordination of Forest management activities with national and local land use trends in a manner consistent with the Forest's ability to supply products and services. The national need for recreational opportunities has greatly increased, with the focus on activities that are low in energy consumption. This national trend and a changing, growing, more recreation-oriented population have increased the importance of the recreation and tourism industry in this area. The national demand for wood products, however, will continue, and the wood products industry will continue to play an important role in the local economy. The Forest should respond to increasing national and local demands for outdoor recreation yet also recognize the importance of timber in the local economy.

b. Resource Objectives

Alternative 12 has the same objectives as Alternative 8 along with an additional objective of adding to the existing Bob Marshall Wilderness. The ID Team recommended that wilderness additions should include the roadless area portions with the highest quality wilderness attributes. The recommended wilderness addition includes an expanded Swan Front addition. Commodity and noncommodity objectives remain the same as Alternative 8. The goal of this alternative is to provide a level of timber harvest to area mills that is consistent with recent volume levels while at the same time responding to the growing recreational orientation of the Flathead area. The first decade timber harvest level is 100 MMBF/yr., increasing by the fifth decade to 165 MMBF/yr. The long-term sustained yield capacity (164 MMBF/yr.) is slightly less than Current Direction (165 MMBF per year).

This alternative's resource management objectives and land assignments through restriction by special stipulation imposes a moderate amount of restrictions on oil and gas access and activities.

All types of recreation opportunities are emphasized. The wildernesses and the Flathead Wild and Scenic River would be managed with higher levels of investment in trail maintenance, access sites, trailhead facilities, and visitor information. Alternative 12 adds the highest quality area to the existing Bob

Marshall-Great Bear-Scapegoat Wilderness Complex (Swan Front). High quality developed recreation opportunities would be available because of increased investment in recreation facilities. This alternative focuses on multiple-use management, and the addition of areas with high wilderness values to the Bob Marshall in the Swan Front. A large proportion of areas designated as roadless dispersed recreation management are not capable of timber production. Therefore, potential competition between providing recreation opportunities and timber volume are minimized. Funding for maintenance of trails and trailhead facilities, visitor services, and trail and facility construction is high.

This alternative would provide potential elk, mule deer, and whitetailed deer habitat at the same level as Alternative 11. Road access to the Forest would be slightly more restrictive. Important fisheries streams would be managed to protect and improve fisheries habitat.

As an objective of this alternative, 94,197 acres of key grizzly bear habitat would be managed with the grizzly bear as the primary management emphasis. Approximately 61,000 acres of this area would be administratively classified as the Trail Creek Grizzly Bear Management Area.* This would be the Nation's first grizzly bear management area. The Trail Creek area contains the finest known grizzly bear habitat in the Northern Continental Divide Ecosystem and all management activites would be oriented toward maintaining or improving grizzly bear habitat. Grizzly bear research would be focused in this area towards providing more baseline data. Subsequent research would study the grizzly bear's reaction to project activity. In order to better assure grizzly bear security, no timber harvesting would be scheduled for the first decade. The unleased portion of the area would be proposed for withdrawal from mineral entry subject to valid existing rights for the first decade. Other existing and historic uses such as seismic surveys, woodcutting, and recreational use would be monitored to assure no adverse impacts to the grizzly bear. The Frozen Lake road would be closed year-long to public use and additional road closures may be implemented if conflicts with grizzly management develop. This added security would contribute to both grizzly bear and gray wolf recovery. Furbearers and nongame species are maintained at levels comparable to Alternative 11.

Alternative 12 would recommend 17 percent of the existing roadless areas to wilderness while maintaining timber harvest near present levels.

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* Refer to Management Area 11 and the Trail Creek Geographic Unit Map in the Forest Plan.

ALTERNATIVE 13

a. Management Direction

The "Social and Economic Overview" (Giannettino, 1981) and public involvement indicate that some people believe:

> The National Forests' multiple-use management philosophy requires maintenance of basic land productivity, yet also allows coordination of Forest management activities with national and local land use trends in a manner consistent with the Forest's ability to supply products and services. The national need for recreational opportunities has greatly increased, with the focus on activities that are low in energy consumption. This national trend and a changing, growing, more recreation-oriented population have increased the importance of the recreation and tourism industry in this area. The national demand for woods products, however, will continue, and the woods products industry will continue to play an important role in the local economy. The Forest should respond to increasing national and local demands for outdoor recreation yet also recognize the importance of timber in the local economy.

b. Resource Objectives

Alternative 13 has the same objectives as Alternative 8 along with an additional objective of adding substantial wilderness close to population centers. The ID Team determined that wilderness additions would include the roadless areas with the highest quality wilderness attributes in the Swan Range.

The recommended wilderness addition includes the Swan Front and Swan Crest. Commodity and noncommodity objectives remain the same as Alternative 12. The goal of this alternative is to provide a level of timber harvest to area mills that is consistent with recent volume levels while at the same time responding to the growing recreational orientation of the Flathead area. The first decade timber harvest level is 100 MMBF/yr., increasing by the fifth decade to 164 MMBF/yr. The long-term sustained yield capacity (162 MMBF/yr.) is slightly less than Current Direction (165 MMBF per year).

This alternative's resource management objectives and land assignments through restriction by special stipulation imposes a moderate amount of restrictions on oil and gas access and activities.

All types of recreation opportunities are emphasized subject to the wilderness objectives. The wildernesses and the Flathead Wild and Scenic River would be managed with higher levels of investment in trail maintenance, access sites, trailhead facilities, and visitor information. Alternative 13 adds the highest quality area to the existing Bob Marshall-Great Bear-Scapegoat Wilderness Complex (Swan Front) and the highest quality area close to population centers (Swan Crest). High quality developed recreation opportunities would be available because of increased investment in recreation facilities. A large proportion of areas designated as roadless dispersed recreation and wilderness management are not capable of timber production. Therefore, potential competition between providing wilderness and recreation opportunities and timber volume are minimized. Funding for maintenance of trails and trailhead facilities, visitor services, and trail and facility construction is high. This alternative would provide potential elk, mule deer, and whitetailed deer habitat at the same level, as Alternative 12. Future forage potential is somewhat reduced. Road access to the Forest would be slightly more restrictive. Important fisheries streams would be managed to protect and improve fisheries habitat.

As an objective of this alternative, 94,197 acres of key grizzly bear habitat would be managed with the grizzly bear as the primary management emphasis. Approximately 61,000 acres of this area, would be administratively classified as the Trail Creek Grizzly Bear Management Area.* This would be the Nation's first grizzly bear management area. The Trail Creek area contains the finest known grizzly bear habitat in the Northern Continental Divide Ecosystem and all management activites would be oriented toward maintaining or improving grizzly bear habitat. Grizzly bear research would be focused in this area towards providing more baseline data. Subsequent research would study the grizzly bear's reaction to project activity. In order to better assure grizzly bear security, no timber harvesting would be scheduled for the first decade. The unleased portion of the area would be proposed for withdrawal from mineral entry subject to valid existing rights for the first decade. Other existing and historic uses such as seismic surveys, woodcutting, and recreational use would be monitored to assure no adverse impacts to the grizzly bear. The Frozen Lake road would be closed year-long to public use and additional road closures may be implemented if conflicts with grizzly management develop. This added security would contribute to both grizzly bear and gray wolf recovery. Furbearers and nongame species are maintained at levels comparable to Alternative 12.

Alternative 13 would recommend 29 percent of the existing roadless areas to wilderness while maintaining timber harvest near present levels.

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* Refer to Management Area 11 and the Trail Creek Geographic Unit Map in the Forest Plan.

ALTERNATIVE 14

a. Management Direction

The "Social and Economic Overview" (Giannettino, 1981) and public involvement indicate that some people believe:

> The National Forests' multiple-use management philosophy requires maintenance of basic land productivity, yet also allows coordination of Forest management activities with national and local land use trends in a manner consistent with the Forest's ability to supply products and services. The national need for recreational opportunities has greatly increased, with the focus on activities that are low in energy consumption. This national trend and a changing, growing, more recreation-oriented population have increased the importance of the recreation and tourism industry in this area. The national demand for wood products, however, will continue, and the wood products industry will continue to play an important role in the local economy. The Forest should respond to increasing national and local demands for outdoor recreation yet also recognize the importance of timber in the local economy.

b. Resource Objectives

Alternative 14 has the same objectives as Alternative 8 along with an additional objective of adding a significant amount of wilderness while maintaining or increasing commodity and other outputs on the nonwilderness portion of the Forest. The ID Team recommended that wilderness additions should include the roadless areas with the highest quality wilderness attributes and should include more than just additions to the Bob Marshall-Great Bear-Scapegoat Complex on the Flathead National Forest. The recommended wilderness additions resulting from the objectives closely approximates the areas recommended by the Montana Wilderness Association's "Alternative W." Commodity and noncommodity objectives remain the same as Alternative 8. The goal of this alternative is to provide a level of timber harvest to area mills that is consistent with recent volume levels while at the same time responding to the growing recreational orientation and demand for wilderness in the Flathead area. The first decade timber harvest level is 100 MMBF/yr., increasing by the fifth decade to 160 MMBF/yr. The long-term sustained yield capacity (159 MMBF/yr.) is slightly less than Current Direction (165 MMBF per year).

This alternative's resource management objectives and land assignments through restriction by special stipulation imposes a moderately high amount of restrictions on oil and gas access and activities.

All types of recreation opportunities are emphasized subject to meeting wilderness and commodity objectives. The wildernesses and the Flathead Wild and Scenic River would be managed with higher levels of investment in trail maintenance, access sites, trailhead facilities, and visitor information. Besides adding area to the existing Bob Marshall-Great Bear-Scapegoat Wilderness Complex (Swan Front and Swan Crest), Alternative 14 would also create a north end wilderness* from the RARE II portion of Mt. Hefty, Tuchuck, and the roadless portion of Thompson Seton. High quality developed recreation opportunities would be available because of increased investment in recreation facilities. This alternative would maintain a pleasant setting in the Flathead Valley. Fewer acres are managed for roadless recreation than in Alternative 8. This alternative focuses on wilderness management of areas with high wilderness values while maintaining commodity outputs. A large proportion of the areas designated as roadless dispersed recreation and wilderness management are not capable of timber production. Therefore, potential competition between providing recreation opportunities, wilderness, and timber volume are minimized. Funding for maintenance of trails and trailhead facilities, visitor services, and trail and facility construction is high.

This alternative would provide potential elk, mule deer, and whitetailed deer habitat at the same level as Alternative 8. Future forage potential is somewhat reduced. Road access to the Forest would be slightly more restrictive. Important fisheries streams would be managed to protect and improve fisheries habitat. About 32,000 acres of the Forest would be managed to improve grizzly bear habitat. This would contribute to grizzly bear and gray wolf recovery. Furbearers and nongame species are maintained at levels comparable to Alternative 8.

Alternative 14 would recommend 40 percent of the existing roadless areas to wilderness. The grizzly bear population would be maintained at recovery levels. A high level of visual quality and recreation settings would be provided.

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* Refer to Forest planning records, "Alternative W" by Montana Wilderness Association.

ALTERNATIVE 15

a. Management Direction

The "Social and Economic Overview" (Giannettino, 1981) and public involvement indicate that some people believe:

> The National Forests' multiple-use management philosophy requires maintenance of basic land productivity, yet also allows coordination of Forest management activities with national and local land use trends in a manner consistent with the Forest's ability to supply products and services. The national need for recreational opportunities has greatly increased, with the focus on activities that are low in energy consumption. This national trend and a changing, growing, more recreation-oriented population have increased the importance of the recreation and tourism industry in this area. The national demand for wood products, however, will continue, and the wood products industry will continue to play an important role in the local economy. The Forest should respond to increasing national and local demands for outdoor recreation yet also recognize the importance of timber in the local economy.

b. Resource Objectives

Alternative 15 has the same objectives as Alternative 8 along with an additional objective of adding substantial wilderness acres to the National Wilderness Preservation System. The ID Team recommended that wilderness additions should include the roadless areas with the highest quality wilderness attributes and should include additions to the Bob Marshall-Great Bear-Scapegoat Complex in several drainages of the Flathead National Forest plus an expanded north end wilderness*.

The recommended wilderness addition includes the areas recommended by the Montana Wilderness Association's "Alternative W" plus portions of roadless areas along the Spotted Bear River, the Middle Fork of the Flathead River, the South Fork of the Flathead River, and the Young-Nasukoin portion of the Thompson Seton roadless area. Commodity and noncommodity objectives remain the same as Alternative 8. The goal of this alternative is to provide a level of timber harvest to area mills that is consistent with recent volume levels while at the same time responding to the growing recreational orientation of the Flathead area. The first decade timber harvest level is 99 MMBF/yr., increasing by the fifth decade to 156 MMBF/yr. The long-term sustained yield capacity (154 MMBF/yr.) is less than Current Direction (165 MMBF per year).

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* Refer to Forest planning records, "Alternative W" by Montana Wilderness Association.

This alternative's resource management objectives and land assignments through restriction by special stipulation imposes a moderately high amount of restriction on oil and gas access and activities. All types of recreation opportunities are emphasized subject to meeting wilderness objectives. The wildernesses and the Flathead Wild and Scenic River would be managed with high levels of investment in trail maintenance, access sites, trailhead facilities, and visitor information. Alternative 15 adds high quality area to the existing Bob Marshall-Great Bear-Scapegoat Wilderness Complex and high quality wilderness area in the north end of Glacier View Ranger District. High quality developed recreation opportunities would be available because of increased investment in recreation facilities. This alternative focuses on wilderness management of areas with high wilderness values. A large proportion of areas designated as roadless dispersed recreation and wilderness management are not capable of timber production. Potential competition between providing recreation opportunities and timber volume are minimized subject to meeting wilderness objectives. Funding for maintenance of trails and trailhead facilities, visitor services, and trail and facility construction is high in nonwilderness recreation areas.

This alternative would provide potential elk, mule deer, and whitetailed deer habitat at the same level as Alternative 8. Future forage potential is somewhat reduced. Road access to the Forest would be slightly more restrictive. Important fisheries streams would be managed to protect and improve fisheries habitat. About 20,600 acres of the Forest would be managed to improve grizzly bear habitat. This would contribute to grizzly bear and gray wolf recovery. Furbearers and nongame species are maintained at levels comparable to Alternative 8.

Alternative 15 would recommend 53 percent of the existing roadless areas to wilderness.

ALTERNATIVE 16

a. Management Direction

The "Social and Economic Overview" (Giannettino, 1981) and public involvement indicate that some people believe:

> The National Forest System was established to ensure that the Nation's forest lands and resources are used in multiple ways, yet are used conservatively. The Forest's primary management objectives should encourage land uses that protect basic productivity and maintain the greatest number of future management options for the American people. Forests such as the Flathead National Forest with unique or scarce resources of national significance should place high priority on the protection of those resources. Extractive uses will continue to occur but must be carefully weighed against long-term social, economic, biological, and physical environmental costs. Nonextractive use of the Forest will be emphasized. This management direction best serves the interests of local communities and the Nation because it ensures continued resource reserves and maintains management options for future generations.

b. Resource Objectives

This alternative focuses on "amenity resources" designating 76 percent of existing roadless lands as wilderness. It emphasizes management of prime grizzly bear habitat in nonwilderness areas through access restrictions, prescribed burning, and some carefully designated timber harvest to maintain the best relationship of cover to forage. This alternative provides an opportunity similar to Alternative 1 for the Forest to make a significant contribution to the recovered population of grizzly bears, by providing and maintaining habitat to support approximately 216 bears. The gray wolf population also is expected to increase in this alternative.

More funding is available for management of the wilderness resource to allow for protection and mitigation of the impacts associated with recreational use. Trail maintenance and visitor information are improved. For similar reasons, the Flathead Wild and Scenic River, campgrounds and picnic areas are managed with higher funding levels.

Big-game populations are of concern in this alternative; however, opportunities to manipulate the vegetation to achieve an optimal cover/forage ratio are limited by conflicts in some areas with management of grizzly bear habitat and in wilderness designations. Thus, the Forest's potential to support big-game populations is reduced, and is second lowest of all the alternatives by the fifth decade.

Wildlife habitat management is emphasized in all riparian areas. This alternative strives to maintain high quality water and low sediment levels in comparison to the current situation.

Commodity resource development is not highlighted in this alternative. Timber harvest provides an annual harvest of 71 MMBF in the first decade, second lowest of all the alternatives. The harvest level results from primary consideration being given to amenity resources including wilderness. Permitted domestic livestock use is similar to Alternative 1. This alternative's resource management objectives and land assignments through restriction by special stipulation imposes a high amount of restrictions on oil and gas access and activities. In the range of alternatives considered, Alternative 16 provides the best opportunities to contribute to recovered population of grizzly bears, high quality water, quality recreational fisheries, and the third highest number of acres in old growth. This alternative allows livestock grazing at low levels similar to Alternative 1, and has the second lowest long-term sustained yield capacity.

ALTERNATIVE 17 (PA)

a. Management Direction

The "Social and Economic Overview" (Giannettino, 1981) and public involvement indicate that some people believe:

> The National Forests' multiple-use management philosophy requires maintenance of basic land productivity, yet also allows coordination of Forest management activities with national and local land use trends in a manner consistent with the Forest's ability to supply products and services. The national need for recreational opportunities has greatly increased, with the focus on activities that are low in energy consumption. This national trend and a changing, growing, more recreation-oriented population have increased the importance of the recreation and tourism industry in this area. The national demand for wood products, however, will continue, and the wood products industry will continue to play an important role in the local economy. The Forest should respond to increasing national and local demands for outdoor recreation yet also recognize the importance of timber in the local economy.

b. Resource Objectives

Alternative 17 has the same objectives as Alternative 8 (the original Preferred Alternative in the Draft EIS) along with an additional objective for adding to the National Wilderness Preservation System. The ID Team recommended that additions to the National Wilderness Preservation System should include the roadless area portions with the highest quality wilderness attributes and the most manageable boundaries.

The recommended wilderness additions are as follows:

Slippery Bill Addition (Change from DEIS)	6,295 Acres
Jewel Basin (Change from DEIS)	31,783 Acres
Swan Front/Bunker Cr. Addition (Increase of 11,148 Acres from DEIS)	54,815 Acres
Limestone Cave Addition	5,187 Acres
Total	98,080 Acres

The Limestone Caves recommended addition to the Bob Marshall Wilderness is an area of spectacular cliffs penetrated by caves that are part of the Limestone Wall formation that extend into the Bob Marshall Wilderness. The portion of the Swan Front proposed as a wilderness addition is adjacent to the western boundary of the Bob Marshall Wilderness. It includes some of the most impressive drainages of the Swan Range. The proposed Jewel Basin Wilderness is an extension of the existing Jewel Basin Hiking Area. The Slippery Bill Mountain recommended addition to the Great Bear Wilderness is a scenic area of rugged cliffs and mountain area that drains into the Great Bear Wilderness. Other commodity and noncommodity objectives remain the same as Alternative 8. The goal of this alternative is to provide a level of timber harvest to area mills that is consistent with recent volume levels while at the same time responding to the growing recreational orientation of the Flathead area. The first decade timber harvest level is 100 MMBF, this is projected to increase to 152 MMBF by Decade 5, assuming that subsequent revisions of the Forest Plan continue with the same goals and objectives. The long-term sustained yield capacity (149 MMBF/yr.) is slightly less than Current Direction (165 MMBF/yr.)

This alternative's resource management objectives and land assignments through restriction by special stipulation imposes a moderate amount of restrictions on oil and gas access and activities.

All types of recreation opportunities are emphasized. The wildernesses and the Flathead Wild and Scenic River would be managed with higher levels of investment in trail maintenance, access sites, trailhead facilities, and visitor information. Alternative 17 adds the highest wilderness quality areas of the Forest to the Wilderness Preservation System. Fewer acres are managed for roadless recreation than under Alternative 8. High quality developed recreation opportunities would be available because of increased investment in recreation facilities. This alternative focuses on balanced multiple-use management, and the addition of areas with high wilderness values and manageable boundaries. A large proportion of areas designated for roadless dispersed recreation management are not capable of timber production; therefore, potential competition between providing recreation opportunities and timber volume are minimized. Funding for maintenance of trails and trailhead facilities, visitor services, and trail and facility construction is high. This alternative would provide potential elk, mule deer, and whitetailed deer habitat at a higher level than Alternative 8. Important fisheries streams would be managed to protect and improve fisheries habitat.

As an objective of this alternative, 108,732 acres of key grizzly bear habitat would be managed with the grizzly bear as the primary management emphasis. Approximately 70,000 acres of this area, would be administratively classified as the Trail Creek Grizzly Bear Management Area*. This would be the Nation's first grizzly bear management area. The Trail Creek area contains the finest known grizzly bear habitat in the Northern Continental Divide Ecosystem and management activities would be oriented towards maintaining or improving grizzly bear habitat. Grizzly bear research would be focused in this area toward providing more baseline data. Subsequent research would study the grizzly bear's reaction to project activity. In order to better assure grizzly bear security, timber harvesting has been unscheduled and the area is removed from the timber base. The unleased portion of the area would be proposed for withdrawal from mineral entry subject to valid existing rights. The purpose of this withdrawal is to permit more time to study the effects of man's activities on grizzly bears. Other existing and historic uses such as seismic surveys, woodcutting, and recreational use would be monitored to assure no adverse impacts to the grizzly bear. The Frozen Lake Road would be closed year-long to public use and additional road closures may be implemented if conflicts with grizzly management develop. This added security would contribute to both grizzly bear and gray wolf recovery. Furbearers and nongame species are maintained at levels comparable to Alternative 8.

Alternative 17 would recommend 19 percent of the existing roadless areas to wilderness while maintaining timber harvest near present levels.

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* Refer to Management Area 11 and the Trail Creek and Whale-Coal Geographic Unit Maps in the Forest Plan.

COMPARISON OF ALTERNATIVES

This section compares the alternatives on an issue-by-issue basis, providing further definition of the issues and the alternative choices for resolving the issues.

Between the March 1983 draft EIS and this final EIS, several new issues or concerns emerged. Some of these were addressed and compared by alternative in the Supplemental Draft EIS published in November 1984. These issues included the wilderness and grizzly bear issues. In the final EIS, social and economic impacts of the Forest's proposed timber harvest program and the visual effects of proposed harvesting in the Noisy Face area were frequently mentioned. These concerns along with others are addressed in this section. For example, social and economic impacts are discussed under Community Effects, and impacts in the Noisy Face area are discussed under Visual Quality.

A display of the changes from Current Direction (Alternative 7) for selected resources is shown in Figure II-2. The graphs show percent change from Current Direction for the first decade.

A. COMPARISON OF RESPONSE TO ISSUES AND CONCERNS

1. RECREATION

Issue: To what extent and where should the Flathead National Forest be managed for specific types of recreational activities?

The Forest Service divides nonwilderness recreation into two broad categories. These are: (1) recreation that occurs at developed sites such as campgrounds, picnic areas, boating sites, and so on; and (2) recreation that occurs in roaded and unroaded dispersed areas (including hunting, fishing, hiking, driving for pleasure, and other activities).

Developed Recreation - Two types of developed sites exist on the Flathead National Forest. One type consists of the private resorts and summer homes operating on National Forest System lands. The other type of developed sites are the public campgrounds and picnic grounds.

The total existing capacity* of private sites is about 768,000 RVD's (recreation visitor days) per year, with two-thirds of that capacity derived from the Big Mountain Winter Sports Area. Existing capacity of public sites is 263,000 RVD's per year. Only the capacity and maintenance levels for public sites are directly affected by the alternatives.

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* Capacity is a concept used here and elsewhere in the discussion of recreation. Capacity refers to the ability of a site or area to absorb use without evidencing physical or biological resource damage and without degrading the desired recreation experience of the Forest visitor.

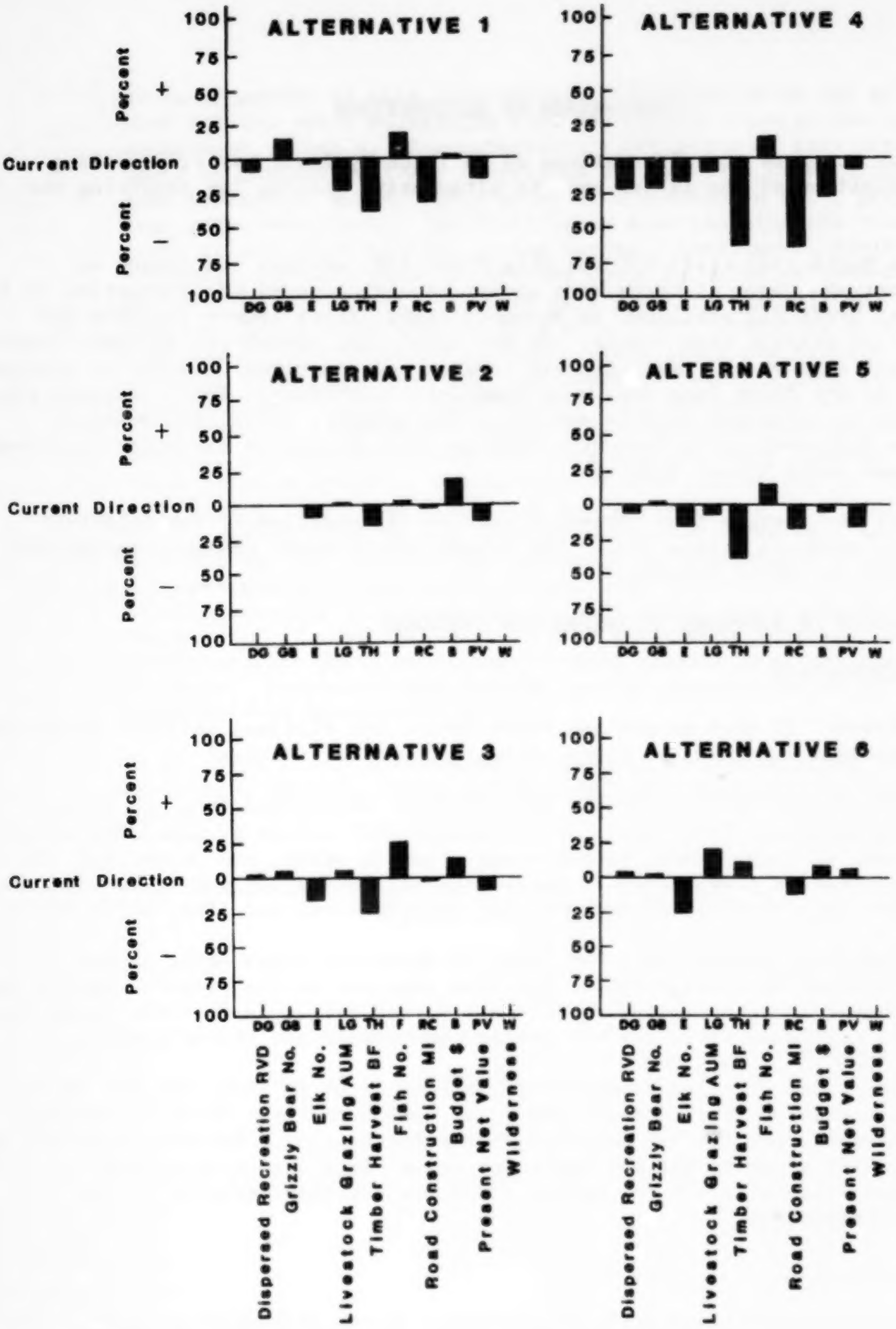

Figure II-2. Comparison of Alternatives with Current Direction.

Flathead National Forest

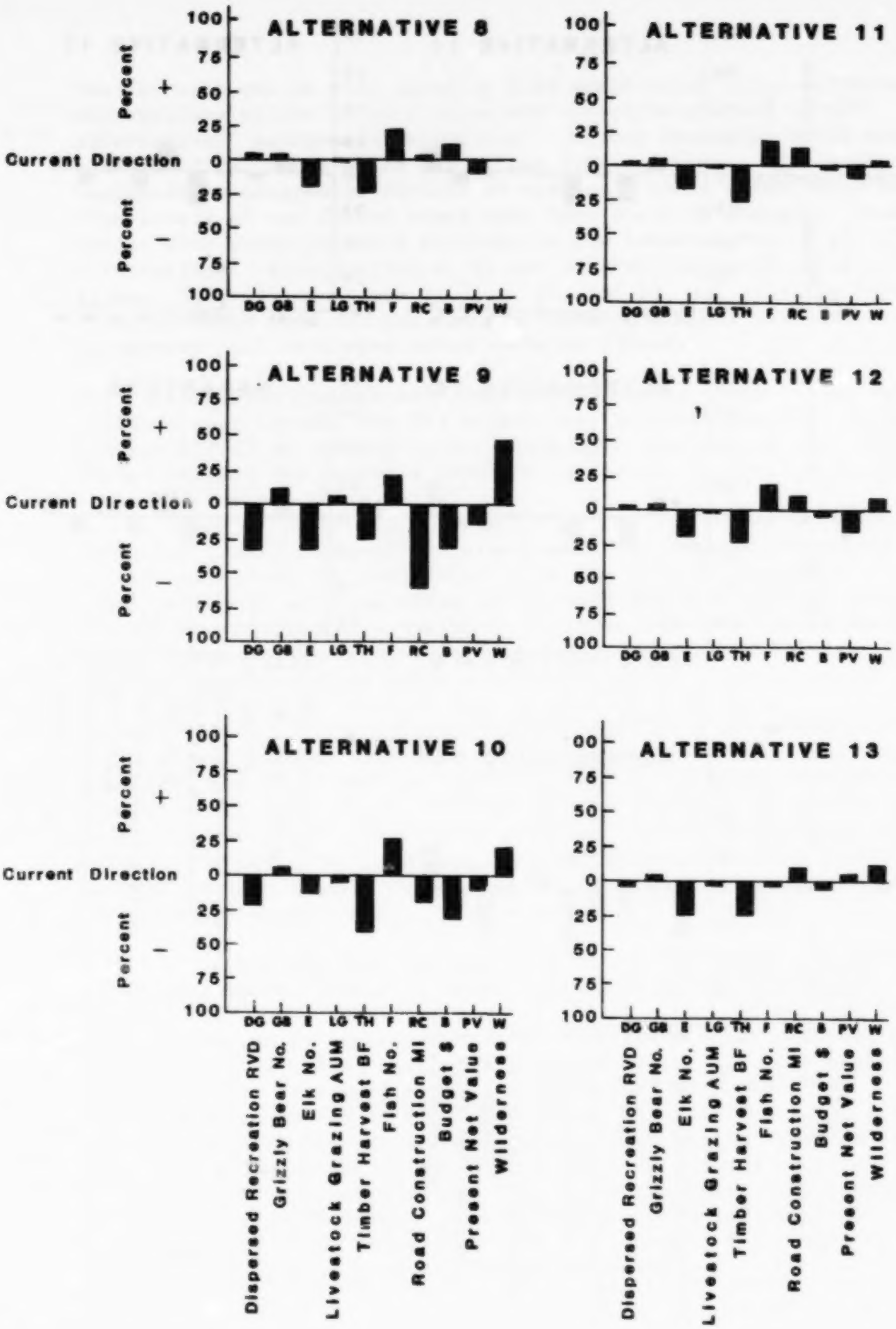

Figure II-2 (cont.).

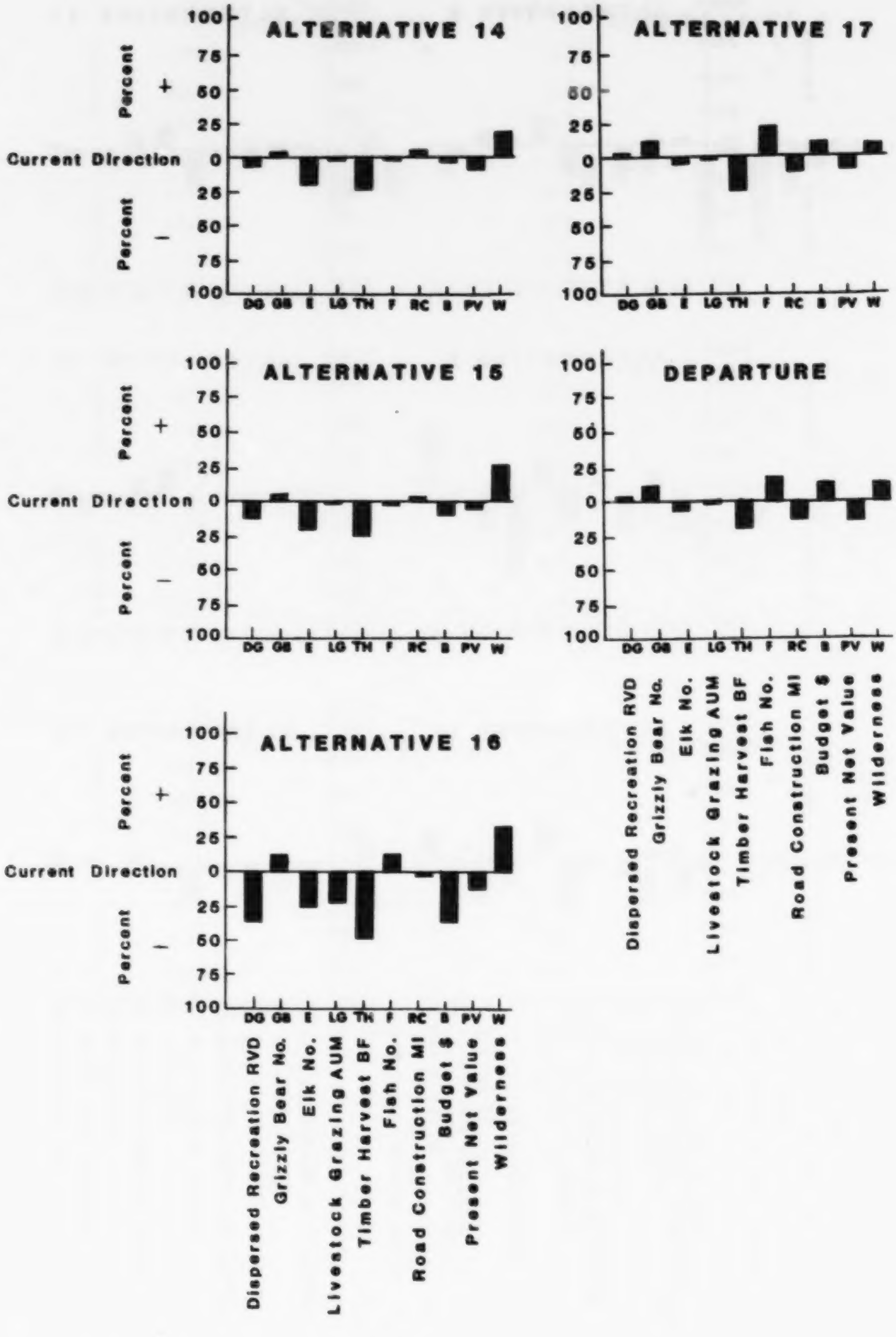

Figure II-2 (cont.).

The Forest's public site capacity that would exist under different alternatives varies as some sites are closed to respond to the alternatives' management objectives. Current Direction would continue closure of two sites while the others remained open. Alternative 4's businesslike management retains as open only those sites which receive high levels of use and/or where user fees could be charged. Thus, total public site capacity would decrease to the lowest level of all the alternatives. Alternatives 2, 6, and the PNV Benchmark would close two sites. Under Alternatives 1, 3, 5, 10, and 16, all existing developed sites would be open for public use. Under a minimum level of management, all developed sites would be closed.

All alternatives provide developed site capacity (both public and private) that exceeds the RPA objectives (see Appendix F). In fact, current (1980) public and private developed site actual use (289,400 RVD's) exceeds the Forest's 1982 RPA objective for developed site capacity (284,440 RVD's).

Projected levels of developed site use do not require construction of additional sites. No additional sites are planned; however, construction at existing sites to increase the diversity of developed recreation opportunities and/or to mitigate resource damage would be compatible with the management direction of the alternatives. Under some alternatives, some sites are closed.

In addition to varying developed site capacity, alternatives vary in terms of the funding available for maintenance and site improvement. "Reduced" and "Full-Service" levels of public site maintenance specify standards for site care.* Reduced service protects the health and safety of the Forest visitor but provides limited maintenance of the site facilities. Full service, in addition to protecting health and safety, assures a level of site maintenance that provides a quality recreational experience.

Under Current Direction, two public sites on the Forest are maintained at or near the full-service level (Swan Lake and Holland Lake Campgrounds). The remainder are managed at a reduced-service level. Alternatives which emphasize quality recreation opportunities, provide full-service levels of maintenance to all public sites to maximize the quality of the developed sites. In an effort to protect the environmental quality of developed sites, Alternatives 1, 5, 10, and 16 provide for full-service maintenance at those public sites receiving high levels of use and/or evidencing resource damage. Alternatives 2, 6, and the PNV Benchmark manage only sites receiving high levels of use at the full-service level. Alternative 4 allows full-service maintenance of sites where user fees are charged; the remaining open sites are managed at a reduced level of service.

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* See the Forest Service standards and guidelines on Cleaning Recreation Sites, July 1980, USDA Forest Service #80231801, pg. 6-7.

Figure II-3 displays the number of public developed sites maintained in each alternative. The solid lines on the graph show the number of sites managed at the full-service level in each alternative.

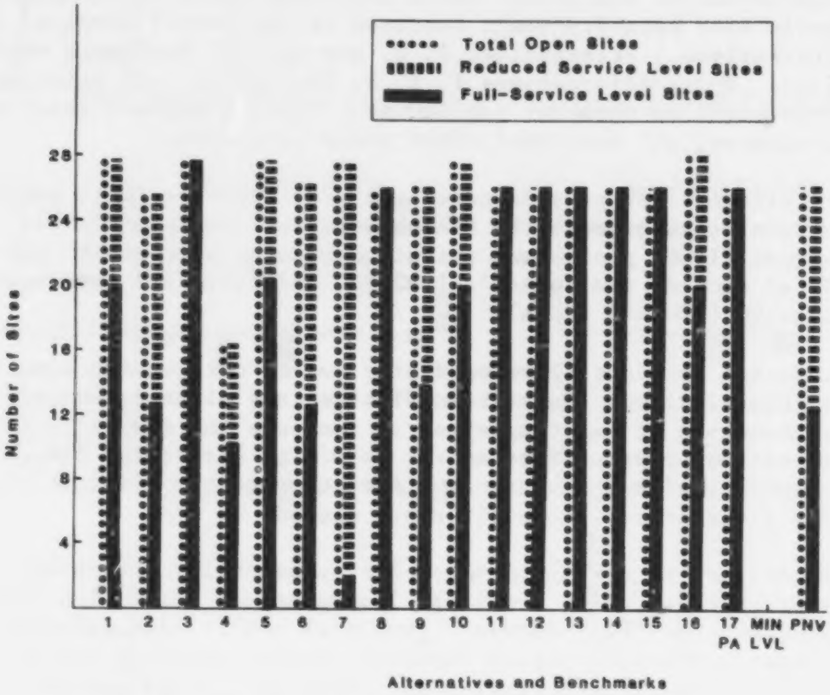

Figure II-3. Service Level of Developed Recreation Sites.
Flathead National Forest

Roadless Dispersed Recreation - Alternatives 1-8 designate varying amounts of the existing roadless acres outside the existing wildernesses to roadless emphases. No new wildernesses are provided. Some of the unroaded acres in each alternative are managed expressly to provide nonmotorized dispersed recreation opportunities. Some are acres managed to meet other resource management objectives that do not require road construction. Nonmotorized recreation opportunities exist in these areas also. Acres designated specifically as nonmotorized dispersed recreation or to "amenity values" management emphases would not have any timber harvest scheduled for them. Other roadless management areas would have timber harvest without road construction.

Alternatives 9-17 designate varying amounts of roadless acres to either dispersed recreation management and/or wilderness. As wilderness acres increase, nonwilderness nonmotorized recreation opportunities decrease in variety. The maximum wilderness alternative (Alternative 9) results in a nonwilderness nonmotorized dispersed recreation reduction, and would nearly eliminate the semiprimitive motorized recreation opportunities on the Forest.

All alternatives vary the levels of management funding available for nonmotorized dispersed recreation, with higher levels of funding implying higher visitor capacity due to improved trail maintenance and increased levels of trail construction/reconstruction and visitor information.

Figure II-4 displays acreages providing nonmotorized recreation opportunities for each alternative. Current Direction maintains 412,000 acres in a roadless state with 375,000 acres of that managed expressly to provide nonmotorized dispersed recreation opportunities. The assortment of objectives for lands managed for dispersed recreation and the low-to-moderate levels of management prevent these acres from providing a high level of recreation visitor capacity.

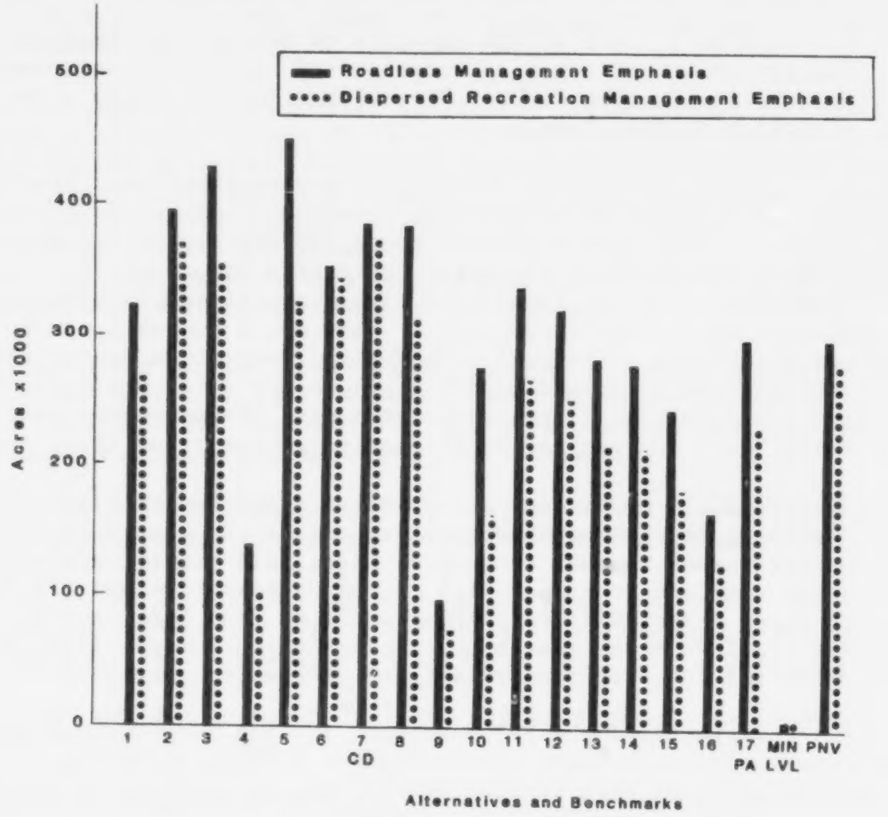

Figure II- 4. Roadless Management

Flathead National Forest

Alternative 1 would provide some high quality roadless recreation opportunities on those acres managed expressly for nonmotorized recreation due to high funding levels. Although the management direction of this alternative does not overtly focus on providing recreation opportunities, the amenity resource emphases of this alternative provide a high potential to accommodate nonmotorized dispersed recreation opportunities on lands not specifically managed for dispersed recreation.

Under Alternative 2, nonmotorized recreation management and funding is channeled to those areas where levels of recreation use are currently high and conflicts are minimal with development of commodity resources.

Alternative 3, with a high emphasis on recreation, designates the largest number of acres as nonmotorized recreation management of all the alternatives except Current Direction. Most of these acres are managed with high funding levels.

Alternative 4 minimizes investment in a resource that provides very limited revenues to the Federal Treasury. Only areas currently receiving high levels of use, about 103,000 acres, are managed to provide nonmotorized dispersed recreation opportunities. A substantial number of acres not capable of timber management receive minimum management in this alternative. They would probably remain roadless, providing some additional nonmotorized recreation opportunities. The minimal levels of funding for trail maintenance, visitor information, and trailhead facilities associated with minimum management, however, would limit the recreation visitor day capacity of these acres.

Alternative 5 emphasizes nonmotorized dispersed recreation as a way of providing recreation opportunities and at the same time protecting unique resources such as grizzly bears, old growth, and roadless areas. Total roadless acres are high on this alternative and are concentrated on three Ranger Districts (Glacier View, Swan Lake, and Spotted Bear). Funding levels are also high. This alternative provides the greatest potential for supplying primitive* recreation opportunities.

Alternative 6 and the PNV Benchmark provide nonmotorized recreation opportunities on lands unsuitable for timber production. By managing these acres at high funding levels, the recreation visitor day capacity is maximized, providing the greatest dollar benefits that these lands can contribute to Forest PNV.

Alternative 8 would provide for nonmotorized recreation management on 369,000 acres. The majority of those acres would be managed at high levels of funding for roadless dispersed recreation. This alternative emphasizes high quality recreation on lands evaluated for their suitability to be managed for nonmotorized recreation opportunities.

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* Primitive is a type of roadless dispersed recreation opportunity and is defined in the glossary.

The Minimum Level Benchmark would not provide funding for trail and trailhead facilities maintenance; therefore, user capacity can be expected to decrease over time as trails become impassible and difficult to locate.

Roaded Dispersed Recreation - Alternatives provide recreation opportunities in a roaded environment in two ways. The majority of motorized recreation opportunities are provided on acres managed to meet other resource management objectives. In these areas, roads currently exist or will be constructed as needed in the future. The remaining motorized recreation opportunities under each alternative are provided by designating some roaded acres with significant recreation opportunities as dispersed recreation management.[7] These designations prohibit additional road construction but allow for continued use and maintenance of existing roads. No regulated timber harvest would be scheduled.

Alternatives vary in capacity to provide for motorized recreation opportunities (see Table II-18). Alternative 8 provides the greatest capacity for motorized recreation opportunities due to the high funding levels associated with the management of other resources. Alternative 9 provides the least capacity. Alternative 17 offers a mix of dispersed recreation similar to Alternative 8, but trades off some roadless dispersed and semiprimitive motorized capacity to recommend additions to the National Wilderness Preservation System.

Potential use of the roaded environment is dependent on the amount of motorized public access that would occur under each alternative. Alternatives 1 and 5 provide for the most restricted access while Alternatives 2, 4, and 6 allow liberal access.

All alternatives provide dispersed motorized and nonmotorized recreation opportunities that exceed the Forest's 1980 RPA objectives.

In all alternatives, trails located in timber management areas would be protected. Following timber harvest activities, they would be relocated if necessary and clearly identified.

Off-road vehicle opportunities and controls will be determined through Forest travel planning associated with the Forest Plan.

Special Recreation Areas - The alternatives do not alter the existing acres of the Flathead Wild and Scenic River; however, the Jewel Basin Hiking Area would be recommended for wilderness designation under alternatives 9, 10, 13, 14, 15, 16, and 17. Funding levels for management do vary and have the potential to affect the degree of maintenance and rehabilitation of facilities; degree of expansion of facilities (to disperse use and protect resource values); degree of visitor contact; and visitor education opportunities. Current Direction provides low funding for management of Jewel Basin and moderate funding for the Wild and Scenic River. Alternative 4 would provide a low level of investment in both areas; Alternative 2, in an effort to respond to rapidly increasing use trends, would provide for moderate funding. Alternatives 3 and 8 would designate high levels of funding to optimize recreational opportunities, while Alternatives 1 and 5 would provide high funding levels to mitigate the resource impacts of recreationists. Alternative 6 and the PNV Benchmark indicate that the benefit/cost ratio is best if Jewel Basin is managed with moderate funding while the Wild and Scenic River is managed at high intensity.

Management opportunities for the Big Mountain Winter Sports Area correlate with opportunities to expand the area currently under special-use permit or to maintain the area's current land base.

2. ROADLESS RESOURCE

Issues:

a. Which roadless areas or parts of roadless areas should be recommended for wilderness?

b. How should the areas not recommended for wilderness be managed?

Figure II-5 gives an overview of the roadless land on the Flathead National Forest in comparison to the amount of Forest land that is wilderness or currently accessed. Within the roadless inventory the designations of wilderness, roadless, and roaded are shown by alternative.

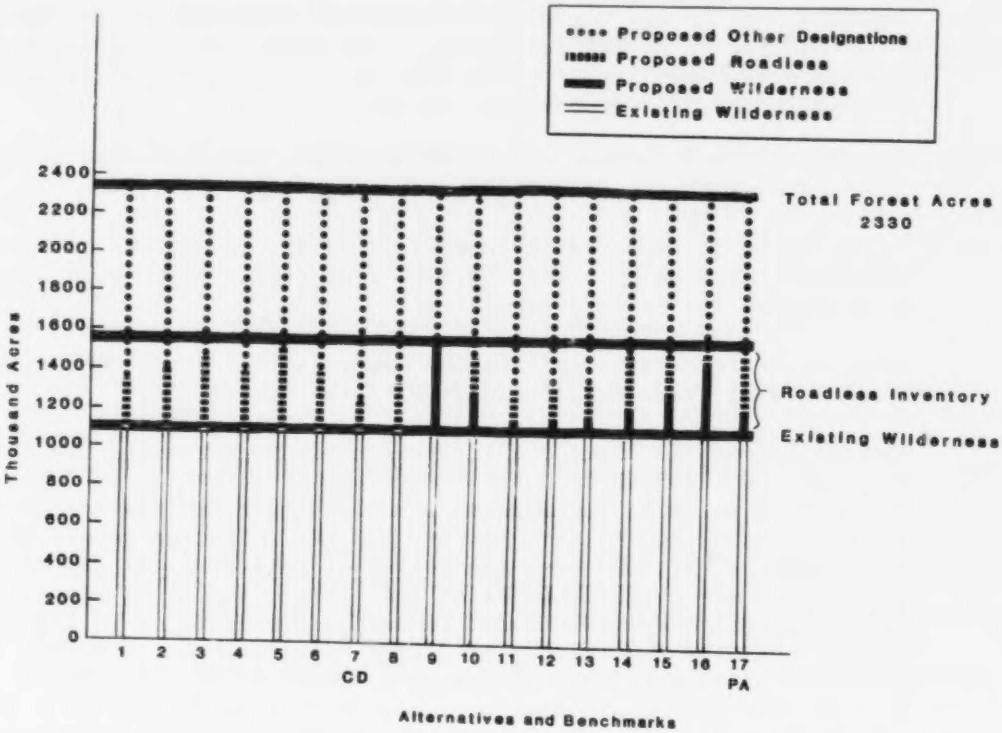

Figure II-5. Proposed Wilderness, Roadless, and Other Designations

Flathead National Forest

The roadless areas inventoried in RARE I and RARE II (Roadless Area Review and Evaluation reports) are listed in Table II-6, Part A. Seventeen roadless areas were inventoried and evaluated in RARE II and were designated for nonwilderness uses in the 1979 Final Environmental Impact Statement. Since 1979, nonwilderness activities such as timber harvest and roading have occurred in some of the areas resulting in a reduction in the amount of roadless land. Roadless areas evaluated for wilderness prior to RARE II in a "Unit Plan" also called for nonwilderness management. Table II-6, Part A also shows the changes to these areas and the resulting 1983 acres.

The Kootenai, Lolo, Lewis and Clark, and Helena National Forests have roadless lands contiguous to the Flathead National Forest roadless areas. The distinction between these adjacent lands is only by administrative boundary. The Flathead National Forest EIS will provide the wilderness evaluation for these roadless areas. (See Appendix C for site-specific evaluation of each inventoried roadless area).

Table II-6, Part B shows by alternative the areas which were recommended for wilderness. Each roadless area was considered for wilderness in at least one alternative and for nonwilderness in at least one alternative. Exceptions to this were two portions of area 01485 on the Lewis and Clark National Forest. One portion, Badger-Two Medicine, is not considered for wilderness in an alternative because of Blackfeet Indian Treaty Rights which allow for uses not compatible with wilderness. The other portion, Deep Creek/Reservoir North, is retained in a further study category.

The alternatives evaluating wilderness were formulated to address various aspects of the roadless issue. Alternatives 10 and 14 specifically address public interests for the wilderness values in particular roadless areas. Alternative 14 provides for 40 percent of the roadless lands as wilderness while trying to maintain or increase commodity production by intensively managing the other Forest lands.

Table II-6, Part C shows how the roadless resource would be managed under different alternatives. The management prescriptions relate to similar information given for each roadless area in Appendix C.

The roadless resource could be impacted by exploration and development of mineral resources. This resource development is subject to the General Mining Law, Mineral Leasing Laws, and related laws and regulations. The Bureau of Land Management is the final authority for Federal mineral management. If such development is proposed and implemented, it would be integrated into surface resource management to the extent that is reasonable. The most probable mineral development in this area is oil and gas. Oil and gas activity is highly speculative and seldom proceeds beyond preliminary exploration or exploratory drilling. The probability of occurrence sharply diminishes with each step.

Management emphases are grouped at the end of Table II-6, Part C, to interpret how the roadless resource will be affected through time. The roaded category indicates the rate of access into roadless lands which are designated as an emphasis allowing roads. The roadless category is a sum of roadless areas greater than 5,000 acres in size which would be available for future consideration as wilderness.

These alternatives portray the results of analyzing the wilderness characteristics of each area or portions of these areas, the need related to each area reflected by public response and concern, and the availability of the particular area relative to the demand for other resources.

TABLE II-6 PART A Roadless Area Inventory Report - Flathead National Forest

AREA ID NO.	AREA NAME	RARE ID NO.	RARE NET ACRES	CHANGE IN ACRES	REASON FOR CHANGE	REVISED NET ACRES
01481	Mt. Hefty	01481	13,700	+ 20	Acreage Recalculation	13,720
01482	Tuchuck	01482	18,600	- 1,080	Acreage Recalculation	17,520
		01482*	2,280	+ 20	Acreage Recalculation	2,300
01483	Thompson Seton	01483	23,000	- 700	Acreage Recalculation	22,300
		01483*	5,700	+ 3,000	Addition of Roadless Area	8,700
		171*		+ 10,400	Addition of Unit Plan Roadless	10,400
		124-125	23,860	+ 6,490	Addition of Unit Plan Roadless	30,350
01507	Le Beau	01507	5,410			5,410
				+ 800*	Addition of Roadless Area	800
X1126	Benchmark	00126	8,960	- 2,470	Timber Sale and Roads	6,490
X1127	Coal Ridge	00127	17,700	- 1,290	Timber Sale and Roads	16,480
X1128	Deadhorse Ridge	00128	28,240	- 4,690	Timber Sale and Roads	23,550
X1129	Standard Peak	00129	10,500	- 2,780	Timber Sale and Roads	7,770
L1FAA	Swan River Island	L1FAA	550			550
***	East Shore	01508	5,190	- 736	Timber Sale and Roads	
				- 4,454	Does Not Meet Roadless Criteria	0
***	Grubb	01509	7,500	- 4,710	Timber Sale and Roads	
				- 2,790	Does Not Meet Roadless Criteria	0
***	Griffin	01510	5,420	- 2,125	Timber Sales and Roads	
				- 3,295	Does Not Meet Roadless Criteria	0
***	Tally	01511	6,700	- 1,700	Acreage Recalculation	
				- 1,450	FY' 84 Timber Sale	
				3,550	Does Not Meet Roadless Criteria	0
	Mission					
01500	Addition 1	01500	960			960
01501	Addition 2	01501	360			360
01502	Addition 3	01502	640			640
01503	Addition 4	01503	640	- 600	FY' 84 Timber Sale	40
01504	Addition 5	01504	150			150
01505	Addition 6	01505	80			80
01506	Addition 7	01506	300	- 190	FY' 84 Timber Sale	110
01485	Bear-Marshall-Scapegt-Swan	01485	732,411	+131,370		863,781
	Flathead NF Portion**		246,879	- 10,770	Timber Sales and Roads	
				+122,841	Boundary Adjustments and Addition of Unit Plan Roadless	
				+102,071		348,950
	Lewis and Clark NF Portion		302,332	- 1,600	Timber Sales and Roads	
				+ 9,828	Addition of Acres Released from Great Bear Wilderness Study	
				+ 8,228		336,628
	Helena NF Portion		61,000	- 2,580	Timber Sales and Roads	
				+ 280	Acreage Recalculation	
				- 2,300		58,700
	Lolo NF Portion		122,175	- 1,275	Acreage Recalculation	120,900

* Located on Kootenai NF.
** Includes Swan Crest, Swan Front, Middle Fork and East South Fork - Flathead.
*** Dropped from inventory - no longer meets roadless criteria.

TABLE II-6 PART B Percent Designated as Wilderness by Alternative -
Flathead National Forest

ROADLESS AREA NAME	ROADLESS NO.	NET ACRES M AC.	WILDERNESS ACREAGE BY ALTERNATIVE 1/									
			1-8	9	10	11	12	13	14	15	16	17
Mt. Hefty	01481	13.7	0	13.7	13.7	0	0	0	13.7	13.7	13.7	0
			0	100%	100%	0	0	0	100%	100%	100%	0
Tuchuck	01482	19.8	0	19.8	19.8	0	0	0	19.8	19.8	19.8	0
			0	100%	100%	0	0	0	100%	100%	100%	0
Kootenai N.F. Portion		2.3	0	2.3	2.3	0	0	0	2.3	2.3	2.3	0
			0	100%	100%	0	0	0	100%	100%	100%	0
Flathead N.F. Portion		17.5	0	17.5	17.5	0	0	0	17.5	17.5	17.5	0
			0	100%	100%	0	0	0	100%	100%	100%	0
Thompson-Seton	01483	71.8	0	71.8	28.0	0	0	0	28.0	71.8	71.8	0
			0	100%	39%	0	0	0	39%	100%	100%	0
Kootenai N.F. Portion		19.1	0	19.1	5.7	0	0	0	5.7	19.1	19.1	0
			0	100%	30%	0	0	0	30%	100%	100%	0
Flathead N.F. Portion		52.6	0	52.6	22.3	0	0	0	22.3	52.6	52.6	0
			0	100%	42%	0	0	0	42%	100%	100%	0
Le Beau	01507	6.2	0	6.2	0	0	0	0	0	0	0	0
			0	100%	0	0	0	0	0	0	0	0
Kootenai N.F. Portion		0.8	0	0.8	0	0	0	0	0	0	0	0
			0	100%	0	0	0	0	0	0	0	0
Flathead N.F. Portion		5.4	0	5.4	0	0	0	0	0	0	0	0
			0	100%	0	0	0	0	0	0	0	0
Benchmark	X1126	6.5	0	6.5	0	0	0	0	0	0	6.5	0
			0	100%	0	0	0	0	0	0	100%	0
Coal Ridge	X1127	16.5	0	16.5	0	0	0	0	0	0	16.5	0
			0	100%	0	0	0	0	0	0	100%	0
Deadhorse Ridge	X1128	23.6	0	23.6	0	0	0	0	0	0	0	0
			0	100%	0	0	0	0	0	0	0	0
Standard Peak	X1129	7.8	0	7.8	0	0	0	0	0	0	0	0
			0	100%	0	0	0	0	0	0	0	0
Swan River Island	L1FAA	0.6	0	0.6	0	0	0	0	0	0	0	0
			0	100%	0	0	0	0	0	0	0	0
Mission												
Addition 1	01500	1.0	0	1.0	0	0	0	0	0	0	1.0	0
			0	100%	0	0	0	0	0	0	100%	0
Addition 2	01501	0.4	0	0.4	0	0	0	0	0	0	0.4	0
			0	100%	0	0	0	0	0	0	100%	0
Addition 3	01502	0.6	0	0.6	0	0	0	0	0	0	0.6	0
			0	100%	0	0	0	0	0	0	100%	0
Addition 4	01503	0.04	0	0.04	0	0	0	0	0	0	0.04	0
			0	100%	0	0	0	0	0	0	100%	0
Addition 5	01504	0.2	0	0.2	0	0	0	0	0	0	0.2	0
			0	100%	0	0	0	0	0	0	100%	0
Addition 6	01505	0.1	0	0.1	0	0	0	0	0	0	0.1	0
			0	100%	0	0	0	0	0	0	100%	0
Addition 7	01506	0.1	0	0.1	0	0	0	0	0	0	0.1	0
			0	100%	0	0	0	0	0	0	100%	0

1/ The percent of total roadless area is displayed beneath each acreage.

TABLE II-6 PART B (CONTINUED) Percent Designated as Wilderness by Alternative - Flathead National Forest

ROADLESS AREA NAME	ROADLESS NO.	NET ACRES M AC.	WILDERNESS ACREAGE BY ALTERNATIVE 1/ 1-8	9	10	11	12	13	14	15	16	17
Bear-Marshall-Scapegoat-Swan	01485	865.2	139.8	717.2	408.3	165.0	119.2	297.8	460.8	544.6	632.8	219.2
			16%	83%	47%	19%	14%	34%	53%	63%	73%	25%
Lewis and Clark N.F. Portion		336.6	63.3	188.6	188.6	46.8	29.5	147.3	188.6	188.6	188.6	51.8
			19%	56%	56%	14%	9%	44%	56%	56%	56%	15%
Helena N.F. Portion		58.7	7.2	58.7	7.2	0	7.2	7.2	58.7	58.7	58.7	0
			12%	100%	12%	0	12%	12%	100%	100%	100%	0
Lolo N.F. Portion		120.9	69.3	120.9	69.3	69.3	0	0	70.2	120.9	120.9	69.3
			57%	100%	57%	57%	0	0	58%	100%	100%	57%
Flathead N.F. Portion		349.0	0	349.0	143.2	48.9	82.5	143.3	143.3	176.4	264.6	98.1
			0	100%	41%	14%	24%	41%	41%	51%	76%	28%
Swan Crest		106.9	0	106.9	60.8	0	0	60.8	60.8	60.8	60.8	31.8
			0	31%	17%	0	0	17%	17%	17%	17%	30%
Swan Front		142.0	0	142.0	82.4	43.7	82.5	82.4	82.3	82.4	111.4	54.8
			0	41%	24%	13%	24%	24%	24%	24%	32%	39%
Middle Fork Flathead		42.4	0	42.4	0	0	0	0	0	8.8	34.7	6.3
			0	12%	0	0	0	0	0	3%	10%	15%
East South Fork Flathead		57.6	0	57.6	0	5.2	0	0	0	24.2	57.6	5.2
			0	17%	0	1%	0	0	0	7%	17%	1%
Roadless Area Totals		1,034.1	137.4	884.7	467.4	162.6	119.2	298.0	522.3	649.9	738.1	215.5
			13%	86%	45%	16%	12%	29%	51%	63%	71%	21%
Flathead N.F. Totals		495.6	0	495.6	196.7	48.9	82.5	143.3	196.8	260.2	369.9	98.1
			0	100%	40%	10%	17%	29%	40%	53%	75%	20%

1/ The percent of total roadless area is displayed beneath each acreage.

TABLE II-6 PART C Management of Roadless Resource by Alternative - Flathead National Forest Acres Only

Management Emphasis	Alternative Acres 1	2	3	4	5	6	7	8
Roadless	274,098	305,520	363,133	127,558	378,879	308,845	226,058	285,784
Minimum Level	2,830	17,880	6,082	217,456	12,413	14,376	69	7,175
Wildlife	190,558	1,327	25,594	1,415	1,241	265	30,680	82,513
Timber W/Roads	27,513	140,971	75,026	119,596	94,015	165,196	234,193	92,346
Timber W/O Roads	431	29,732	25,595	29,405	8,882	6,748	4,430	27,612
Wilderness	0	0	0	0	0	0	0	0

Summary of Management Emphases (Estimated Acreage for Decade 1 with Projections for Decade 5)

	1	2	3	4	5	6	7	8
ROADED Decade 1 ------------->	4,364	38,248	15,960	4,980	4,020	41,220	32,373	19,455
5	38,024	131,242	97,827	112,761	91,506	145,531	222,403	144,451
ROADLESS Decade 1 ------------->	491,066	457,182	479,470	490,450	491,410	454,210	463,057	475,975
5	457,406	364,188	397,603	382,669	403,924	349,899	273,027	350,979
WILDERNESS Decade 1 ------------>	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0

Management Emphasis	Alternative Acres 9	10	11	12	13	14	15	16	17
Roadless	0	189,940	240,655	223,680	178,974	178,097	141,626	68,932	188,054
Minimum Level	0	12,233	6,672	5,955	5,956	5,958	4,235	0	2,150
Wildlife	0	1,198	81,025	69,490	68,094	16,774	275	40,428	88,411
Timber W/Roads	0	85,954	90,612	88,103	81,586	81,619	73,273	12,122	96,611
Timber W/O Roads	0	9,322	27,612	25,713	17,568	16,296	15,816	124	22,124
Wilderness	495,430	196,783	48,854	82,489	143,252	196,686	260,205	373,824	98,080

Summary of Management Emphases (Estimated Acreage for Decade 1 with Projections for Decade 5)

	9	10	11	12	13	14	15	16	17
ROADED Decade 1 ------------->	0	4,020	18,890	18,830	18,830	17,950	9,910	2,100	17,850
5	0	84,792	117,776	113,843	107,038	97,181	75,520	9,804	112,125
ROADLESS Decade 1 ------------->	0	294,627	427,686	394,111	333,348	280,794	225,315	119,506	379,500
5	0	213,855	328,800	299,098	245,140	201,563	159,705	111,802	285,225
WILDERNESS Decade 1 ------------>	495,430	196,783	48,854	82,489	143,252	196,686	260,205	373,824	98,080
5	495,430	196,783	48,854	82,489	143,252	196,686	260,205	373,824	98,080

3. WILDERNESS

Issue: At what level should the Flathead National Forest manage the wilderness resource, including trail maintenance and fire management?

In all alternatives, the wilderness resource will be preserved to the extent possible under existing laws and regulations.

Alternatives consider two levels of funding for management of the wildernesses. These funding levels imply different levels of trail maintenance, visitor contact, information and education, and permit administration resulting in wilderness resource protection. The user capacity of the wildernesses is linked to funding levels assuming that increased use could be accommodated if (1) trails are maintained so use can be dispersed, (2) visitor information and education is maximized so user impacts are reduced, and (3) special-use permit administration is improved to minimize potential impacts. The funding levels also call for different time frames for the development and implementation of the LAC (Limits of Acceptable Change) process. With increased funding, the process and resulting wilderness management practices could be developed sooner.

Current Direction calls for high funding for management of the Mission Mountains because of the Mission Mountains Wilderness Management Plan (1978) and low funding of the Bob Marshall and Great Bear Wildernesses.

Alternatives with high funding levels, including the PNV benchmark would provide for high quality wilderness recreational opportunities by Decade 5. This projection is a result of the need to provide as much visitor contact and education, and site and trail maintenance as possible within the wilderness resource. The Forest Service estimates that the use of Flathead National Forest wildernesses would exceed the recreation carrying capacity before Decade 5 for all alternatives. Additional controls on wilderness use will be required in the future to protect the wilderness resource and provide quality primitive wilderness recreation. In all alternatives the LAC (Limits of Acceptable Change) process will involve wilderness users in determining the type and timing of necessary controls.

Alternative 9 provides the highest possible wilderness recreation opportunity by designating all roadless areas and existing wilderness areas to full-service wilderness management. The maximum wilderness alternative could meet approximately 55 percent of projected wilderness use by Decade 5.

In the short term, Alternative 2 focuses high funding where existing use is concentrated, that is, in the Mission Mountains and the South Fork of the Bob Marshall. The remainder of the Bob Marshall and the Great Bear Wildernesses would receive low levels of funding. After 1990, funding levels in these areas increase.

Alternative 4 minimizes investment of dollars in the wildernesses and manages all at low funding levels. With fewer dollars for management, the wildernesses' capacity for public use without damage to the wilderness resource is reduced.

Wilderness management guidelines for the Bob Marshall and Great Bear Wildernesses will be the same for all alternatives. Management guidelines have been developed for the Bob Marshall-Great Bear-Scapegoat Wilderness Complex by the Lolo, Lewis and Clark, Helena, and Flathead National Forests.

Alternative 17 recommends adding high quality area (about 98,000 acres) to the National Wilderness Preservation System in areas that appear to have minimal conflicts with commodity outputs and other land uses.

4. VISUAL QUALITY

Issue: What are the visual management objectives for viewing areas within the Flathead National Forest?

An inventory of the Forest has identified areas where the visual significance of the nonwilderness landscape is high.* If the view is to remain natural appearing or relatively natural appearing, resource management activities in these important areas would be guided by recommendations that retain or partially retain the natural-appearing view. Forest-wide apparent quality recommendations for retention (where man's activities are not visible) and partial retention (where man's activities do not dominate the landscape) potentially total 519,359 acres.

Each alternative provides visual management objectives that can be evaluated against the Forest-wide potential. Figure II-6 displays acres of potential visual quality provided for by the mix of land designations associated with each alternative.

Current Direction provides land designations that meet about 63 percent of the inventoried potential. Alternative 1 with 61 percent and Alternative 5 with 62 percent are very similar to Current Direction. Alternatives 1 and 5, however, protect the visual landscape in critical areas as well as other less critical but frequently viewed portions of the Forest. Current Direction, based on existing plans, protects some areas of the Forest that are not frequently seen and would modify some critical areas.

Alternatives 2 and 4 maintain the quality views only in the critical viewing areas - those areas of the Forest seen from population centers and main travel corridors. These constitute 38 percent of the potential. Visual quality of the Forest is decreased, reflecting an emphasis on cost-efficient resource management and increasing timber production potential.

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* The wildernesses will, under all alternatives, be managed with objectives that preserve their visual quality.

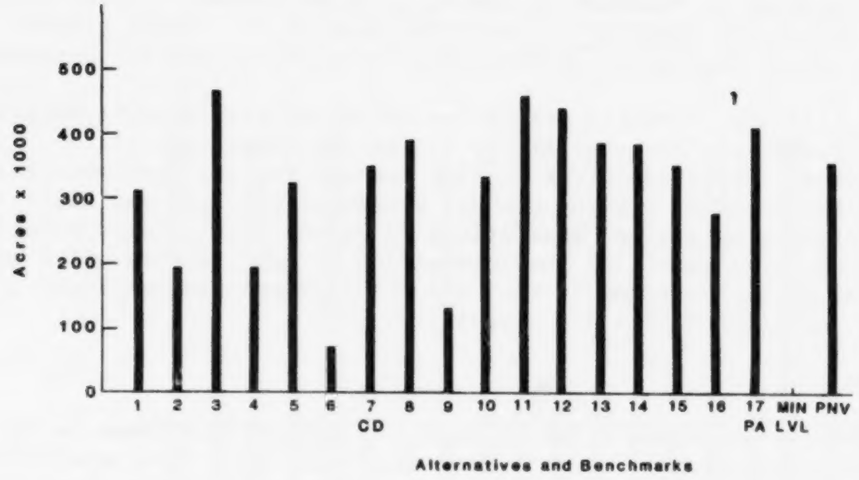

Figure II-6. Retention and Partial Retention Visual Quality Objectives Met in Nonwilderness Areas

Flathead National Forest

Alternative 6 and the PNV Benchmark emphasize commodity resource development and therefore meet 14 percent of the potential recommendations.

Alternative 3 maintains nearly all visually sensitive areas (89 percent) as natural-appearing landscapes. Alternative 8, in an effort to reduce management costs, maintains fewer visually sensitive areas than Alternative 3 (75 percent); however, natural appearing landscapes on acres facing population centers, major recreation areas, and main travel routes are retained. Alternative 17 makes further reductions of visual quality in noncritical areas, primarily in favor of elk winter range management on suitable timberlands while increasing the total visual quality areas where the suitable timberbase was reduced. Visual quality objectives were increased in critical areas such as Noisy Face by reducing the timberbase.

As wilderness acres increase (Alternatives 9-17), some of these viewing areas are designated as wilderness and therefore will be managed with objectives that preserve their visual quality.

Over time, the Minimum Level Benchmark would have high visual quality because no development activities would occur except possibly oil and gas. Oil and gas development does impact the visual resource, however, no specific management objectives for the visual resource would be implemented.

5. FISH AND WILDLIFE

Issue: How much and what type of habitat should the Flathead National Forest provide for diverse fish and wildlife species, including those classified under the Endangered Species Act?

Alternatives 9-17 provide information on habitat conditions for various wildlife species in relation to increases in wilderness. Wilderness can provide additional security for wildlife species but limits planned manipulation of vegetation specifically for wildlife habitat purposes.

Fish and wildlife potential population estimates displayed in Forest Plan environmental documents are to aid in the comparison of alternatives. The projections of fish numbers use the best modeling information available but the numbers presented have unknown statistical reliability. They are not predictions of actual populations. Actual populations are a result of the interaction of many factors which may cause greater fluctuations in fish and wildlife populations than National Forest land uses and activities.

a. Fish

Alternatives do not directly impact fisheries in streams in the wildernesses or in Forest lakes, unless the lake fish populations depend on adfluvial production. The effects of alternatives and benchmarks were analyzed in terms of trout populations in streams located in the nonwilderness environment (see Chapter IV, page 116, for discussion of off-site effects on catchable trout).

Figure II-7 summarizes the estimated effects of alternatives and benchmarks on numbers of catchable trout in Flathead National Forest nonwilderness streams (refer to Table II-2 for current situation information - 1980 base year was 473,000 fish). Only indicator species (bull trout and cutthroat trout) populations are analyzed as these are most sensitive to Forest management activities. The variables in each alternative that affect trout population are the management objectives and funding levels designated as riparian emphasis, projected levels of habitat improvement, number of domestic livestock permitted watershed quality, and sediment levels resulting from timber management activities and road construction.

Under Current Direction, nonwilderness stream trout populations decline from existing levels. This is due to the current level of domestic livestock grazing and continued disproportionate cutting of a relatively high volume of timber in certain areas with resultant impacts to water quality and quantity.

Alternative 1 on the other hand has the most positive effect on fisheries with nonwilderness stream trout populations increasing substantially in the first four decades as a result of fish habitat improvement projects and lower timber harvest. In Decade 5, however, the trout populations begin to decline as increasing levels of timber harvest and associated road construction impact water quality. Still, population levels are higher than they are currently.

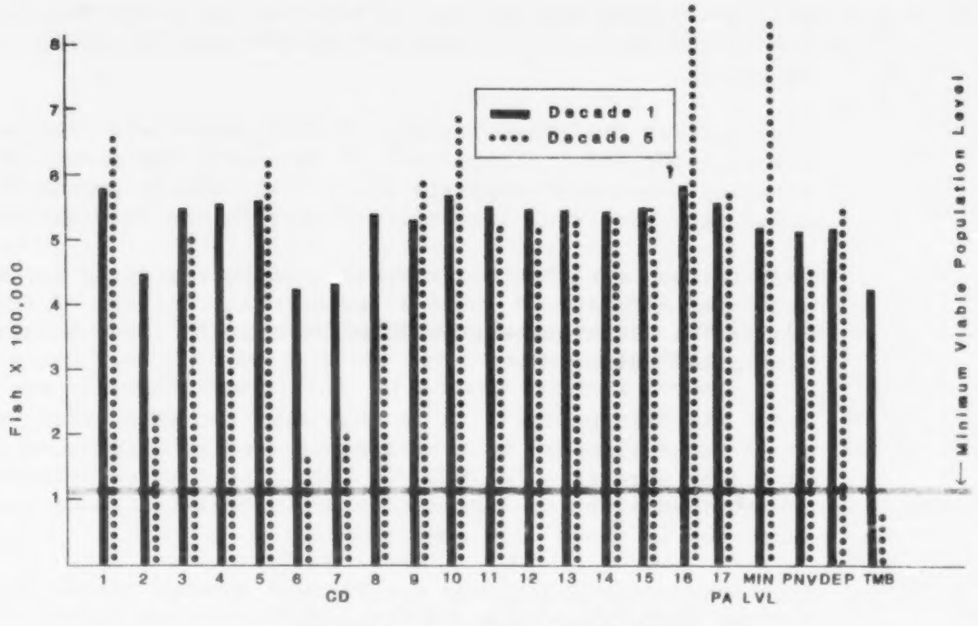

Figure II-7. Potential Annual Number of Catchable Trout from Nonwilderness Streams
Flathead National Forest

Alternatives 2 and 6 have immediate and continued adverse impacts on the trout indicator species. Populations begin to decline in the first decade. Alternative 6 provides for fisheries habitat improvement projects in its riparian management direction, but those projects cannot fully mitigate the impacts of the timber harvest and associated activities of this alternative. Of all the alternatives, Alternative 6 most adversely affects the nonwilderness stream trout population, both in the short and long term.

Alternative 3 and the PNV Benchmark produce moderate impacts on fisheries in the range of alternatives considered. Nonwilderness stream trout populations increase in the first two decades due to habitat improvement projects and then begin to slowly decrease.

Alternative 4 delays high timber harvest levels to the third decade, allowing for increased trout populations for the first 20 years. By Decade 3, populations are decreasing.

Alternative 8 utilizes fish habitat improvement projects to increase catchable trout populations in nonwilderness streams. Over the first two decades, these projects result in increased potential populations, however, in the third decade, populations begin to slowly decline as habitat improvement does not fully mitigate timber harvest activities. By the fifth decade, the population potential is returned to the level existing in Decade 1.

Alternatives 9-17 have a range of fish potentials similar to Alternatives 1-8. Alternative 17 increases the amount of area with riparian management emphasis along fish numbers predicted by the model as a result of correcting errors in the DEIS calculations.

The Minimum Level Benchmark would eliminate grazing and man caused watershed effects and would allow natural recovery of stream fisheries. Fish numbers would ultimately increase to the biological potential.

Under all alternatives, it is unlikely that other fish species would be as affected by Forest management activities as the indicator species. In fact, in some alternatives reduced competition with the decreased trout population could lead to increases in other fish populations.

Fish population objectives established through the Northern Region and the State Department of Fish, Wildlife, and Parks cannot be reached due to the inherent low productivity of the Forest's streams and lakes.

b. Big-Game Winter Range

Potential winter range forage requires optimum cover/forage relationships for forage to be utilized by elk, mule deer, and whitetailed deer. Winter range forage production is a function of the acres of suitable winter range designated as winter range management prescriptions, the funding levels for winter range management, and the timber harvest schedule for the alternative. Factors considered in forage production include road density, size of opening as it affects distance from hiding cover to feeding area, the spacial arrangement of existing and future openings, and management of lands adjacent to areas managed as winter ranges.

Table II-7 shows projected average annual pounds of utilizable forage produced in the first five decades for each alternative and the PNV benchmark. Only nonwilderness forage production is shown as all alternatives provide the same amount of wilderness forage, supporting about 2,000 mule deer or elk in the wildernesses. The potential numbers of whitetailed deer and mule deer/elk shown in Table II-18 are for overwintering populations. The numbers shown would be generally 10 to 20 percent below prehunting season populations for elk and mule deer and 20 to 30 percent below for whitetailed deer.

The potential of the Forest to provide a high level sustained yield of usable big-game winter forage is not significantly affected by wilderness additions unless lower elevation unroaded winter ranges are included. Browse production levels under natural conditions in wilderness are less than that projected under managed conditions. These areas are generally not included except in alternatives which have high wilderness objectives such as Alternative 9 or 16.

TABLE II-7 Estimated Decade 1 Nonwilderness Winter Range Forage for Elk and Whitetailed Deer With Projections for Subsequent Decades (Millions of Pounds Annually)* - Flathead National Forest

	Alternative								
	1	2	3	4	5	6	7 CD	8	9
Decade 1 -------->	6.3	5.9	5.2	5.0	5.4	4.3	6.8	4.8	3.6
2	6.2	6.3	5.7	5.3	5.6	4.0	7.0	4.7	3.3
3	7.6	9.2	8.6	7.3	7.6	4.5	8.1	6.7	3.4
4	7.4	10.3	9.7	7.6	8.4	5.7	8.3	7.9	4.0
5	7.8	11.5	11.0	8.4	9.8	6.8	8.1	10.0	4.6

	Alternative								
	10	11	12	13	14	15	16	17 PA	PNV
Decade 1 -------->	5.3	4.8	4.7	4.6	4.6	4.5	4.8	6.0	4.3
2	5.5	4.8	4.7	4.5	4.5	4.3	4.6	6.4	4.0
3	7.3	6.7	6.7	6.5	6.5	6.0	5.3	8.1	4.4
4	7.9	8.2	7.9	7.8	7.8	7.2	5.0	9.2	4.9
5	9.0	10.0	10.0	10.0	10.0	9.0	5.0	10.0	6.0

* Approximately 87 percent is utilized by elk and mule deer and 13 percent by whitetailed deer.

Alternative 17 wilderness recommendations do not affect big-game winter range. Alternative 17 achieves a high level of big-game potential primarily due to the identification of additional big-game winter range opportunities and assignment of those areas to winter range management.

Figure II-8 and Figure II-9 display the percent of potentially suitable winter range actually managed as winter range in each alternative, indicating the degree of each alternative's emphasis on mule deer, elk, and whitetailed deer as compared to what it would be if all winter range were managed for that emphasis.

Road Management - Potential deer and elk populations are affected by the road management program associated with each alternative. Road construction and management are discussed later in this chapter and in Chapter IV.

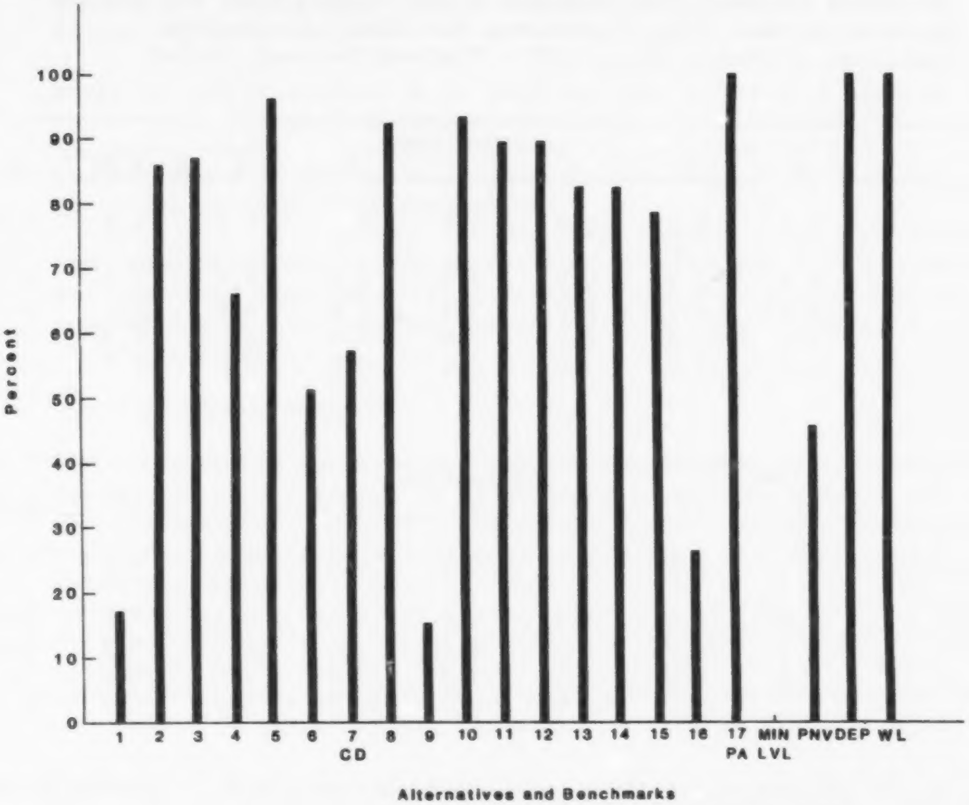

Figure II-8. Potentially Suitable Elk and Mule Deer Winter Range Managed as Winter Range (Nonwilderness)

Flathead National Forest

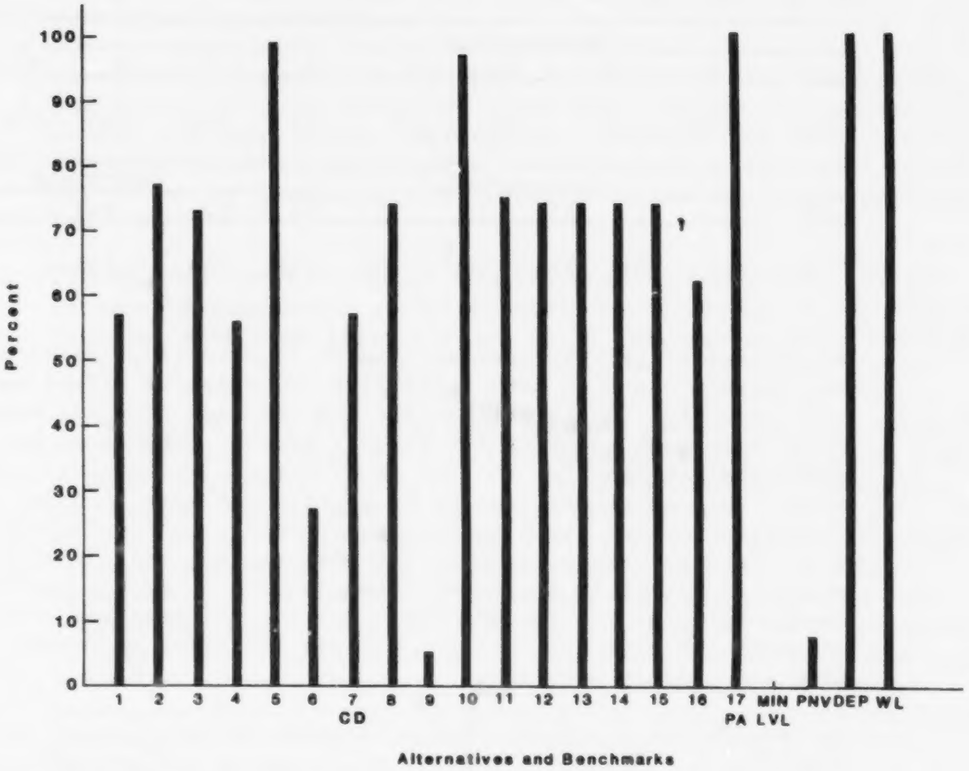

Figure II-9. Potentially Suitable Whitetailed Deer Winter Range Managed as Winter Range (Nonwilderness)

Flathead National Forest

c. Threatened and Endangered Species

Table II-8 displays the long-term grizzly habitat potential estimated for land-use patterns and management activities as projected for each of the alternatives. The potentials represent the habitat capacity at the steady state condition if the land-use patterns were fully implemented over long periods of time. The potential habitat capacity is for comparison purposes and they do not represent estimates of actual bear populations. Actual bear populations may fluctuate from decade to decade as a result of factors other than National Forest System land use patterns. Alternative 16 features increased grizzly bear security in both wilderness and nonwilderness along with vegetation management for grizzly habitat needs in nonwilderness to produce the highest grizzly bear potential of all alternatives.

TABLE II-8 Grizzly Bear Potential (Displayed as Number of Bears) - Flathead National Forest

Alternative								
1	2	3	4	5	6	7	8	9
215	190	197	152	195	191	190	200	212

Alternative								BENCHMARK
10	11	12	13	14	15	16	17	PNV
195	201	201	202	202	202	216	205	184

A key part of grizzly bear management is security. Wilderness designation can have both a positive and negative affect on grizzly bear security. Restricted access and the lack of roads normally would mean more security for grizzly bears. Experience has also shown that designating an area as wilderness calls attention to the area. This sometimes results in greatly increased recreation visitation, which could increase bear/people confrontations. Nonwilderness uses of an area may mean roading and improved access which can result in increased human use and increased bear/human confrontations. If roaded, human use control measures such as road closures and area closures are methods which may be needed to maintain grizzly security.

Another factor resulting from wilderness designation is the inability to manipulate vegetation to ensure optimal habitat conditions (Servheen, 1983, and Zager and Jonkel, 1983). Habitat management options are usually broader for nonwilderness designations.

The three designated wildernesses provide habitat to support between 113 and 130 grizzly bears, depending upon the management objectives and funding levels of the alternatives. The lower level of management associated with Alternative 4 would make "low impact camping" difficult to implement, reducing the quality of the grizzly bear habitat in the wildernesses. Higher funding levels improve the quality of the wildernesses and grizzly bear habitat through improved management of human use and earlier implementation of the Wilderness Fire Management Plans.

Current Direction, Alternatives 2, and 6 provide a mixture of land designations capable of supporting 190-191 bears. The number of potential bears is attributed to large acreage of nonproductive lands designated as dispersed recreation, which preserves habitat in an unroaded state. In addition, Current Direction includes 35,000 nonwilderness acres designated as grizzly bear management emphasis.

Alternative 3, with 197 bears, reflects the designation of 37,000 acres as grizzly bear habitat management emphasis. Alternative 5, with 195 bears, reflects substantial designation of lands for management to protect amenity values and provide roadless recreation opportunities.

Alternative 4 shows a low potential population of grizzly bears, mostly due to large number of acres where minimum management will occur. On these acres, improvement in habitat may occur but will not be a result of management. Grizzly bear habitat will exist, but it is not managed for or protected beyond the level required by law.

The Minimum Level Benchmark would protect grizzly bear habitat because no management activites would be occurring on the Forest. Thus the number of grizzly bears would increase to about 210-215 bears.

Alternatives 9-17 offers grizzly habitat potentials that range from 195-216 bears. These alternatives generally offer slightly higher potentials than corresponding alternatives with no wilderness because the recommended wilderness replaces land uses in Alternatives 1-8 that offer less security. No changed occurred between Alternative 5 and Alternative 10, because the areas recommended as wilderness in Alternative 10 are protected with roadless designations in Alternative 5. Alternative 17 shows an increase in bear potential in relation to Alternative 11 due to the reduction in the suitable timberbase, increase in wilderness recommendations, increase in grizzly bear management emphasis, and reduction of scheduled timber harvest in Situation 1 habitat compared to Alternative 11.

All alternatives represent a range of viable, recovered grizzly population potentials for the Flathead National Forest and are judged to be in compliance with the 1973 Endangered Species Act. The Forest Plan displays the Forest-wide Grizzly Bear Management Guidelines. Results of applying the guidelines on scheduled management activities is discussed in Chapter IV of this EIS. Key results are a rescheduling of the 10-Year Timber Sale Offering (Forest Plan - Appendix M) to provide grizzly security over time and space.

Activities which can affect the security of the grizzly are recreation use, timber harvest, roading, mineral exploration and development, and livestock grazing.

The Preferred Alternative details the Flathead National Forest emphasis towards achieving recovery of the grizzly bear in the Northern Continental Divide Ecosystem based on current information. If future analysis, monitoring results, or research indicates the population is not being recovered, amendment or revision of the Forest Plan may be necessary.

To facilitate recovery of the grizzly bear, the Flathead's annual target will be "zero" nonhunting grizzly mortalities. Many nonhunting bear losses could be prevented by inclusion and implementation of grizzly bear protection measures in: (a) leases, permits, contracts, and other authorizations affecting grizzly bears, and (b) activities conducted by the Forest Service in occupied grizzly bear habitat. Not all nonhunting mortality, however, is truely preventable. Examples are road kills and nuisance bear control. The Flathead's grizzly bear standards and guidelines would be applied in all alternatives to facilitate attainment of this target. All alternatives have the same acres of Management Situation 1, 2, and 3. Management emphasis will be placed on eliminating "preventable" mortalities. Table II-9 documents the number of relocations and mortalities in the Northern Continental Divide Ecosystem.*

TABLE II-9 Number of Grizzly Bear Relocations and Mortalities (1975-1984) - Flathead National Forest

Type of Loss	Total Northern Continental Divide Ecosystem	Flathead N.F.
Nonhunting	92	43
Hunting	106	70
Total	198	113

The security necessary for the protection of gray wolf is provided by the gray wolf guidelines under Forest-wide standards in Chapter II of the Forest Plan. Evaluations of the grizzly bear adequately assess the relative effects of alternatives on the gray wolf. It is anticipated that gray wolf population control will be an integral part of wolf recovery under all alternatives.

The final draft of the Rocky Mountain Gray Wolf Recovery Plan is presently being formulated in cooperation with State and Federal agencies.

All alternatives will provide protection for bald eagle and peregrine falcon nesting sites through management guidelines applied Forest-wide to management activities that have a potential for disturbing these endangered species.

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* Refer to Appendix E in Volume II of this EIS for more detailed discussions of the Northern Continental Divide Ecosystem.

d. Snags

Snags and dead, down woody material provide habitat for approximately 70 species of birds and mammals and are protected in all alternatives through a set of management guidelines. These guidelines provide direction for project activities that ensure maintenance of the necessary amount of snags and down wood to maintain viable wildlife populations.

6. RANGE

Issue: What level of forage production can be used by domestic livestock while protecting other Flathead National Forest resource values?

Nonwilderness - Forage production on nonwilderness lands results from vegetative manipulation on potentially suitable transitory range. Alternatives provide different range management options. Forage production levels vary as timber harvest levels vary within each alternative. To provide a viable allotment program, periodic forage fluctuations are constrained to provide a sustained amount of AUM's, consistent with the management objectives of the alternative. State of Montana and private lands contribute to the total forage produced on an allotment. Their forage values are not included in this analysis.

Potentially suitable transitory range located in inaccessible cirque basins or in small isolated tracts is considered unsuitable in all the alternatives except Alternative 6. Alternative 6 has a management objective which maximizes grazing opportunities on the Forest, therefore, all potentially suitable areas are considered suitable even if considered inaccessible and difficult to manage in other alternatives. Available forage volumes are reduced in some alternatives to compensate for potential conflicts with other resource management objectives (i.e., winter range, grizzly bear, and riparian zone management).

Under the Minimum Level Benchmark, existing allotment permits would be terminated and grazing would be eliminated.

Wilderness - Permitted recreational stock grazing in wildernesses, primarily outfitter transportation stock, would vary depending on the funding intensity and management philosophy of the alternatives. At the present time under Current Direction, grazing in wilderness is at the highest acceptable level and is above acceptable levels in some areas. While some areas with forage could be considered undergrazed, these barely compensate for areas currently sustaining overuse.

Increased funding for wilderness management in Alternatives 3, 6, 8, and the PNV Benchmark would allow the use to remain near the current level, with less resource damage through better distribution and management of stock. More conservative alternatives (Alternatives 1, 5, 10, and 16) reduce permitted stock use even though funding levels are high because of concerns for wilderness resource protection. With the lower funding levels of Alternatives 2 and 4, protection of the wilderness resource requires reduced stock numbers.

None of the alternatives provide a level of total potential wilderness and nonwilderness AUM's that would meet the Forest's RPA objectives for the first decade (7,849 AUM's) or any of the following decades. The range benchmark indicates that the Forest could provide at most 12,000 AUM's on nonwilderness lands, and that level of forage production is projected to occur only in Decade 13. The next highest level of forage is produced in Decade 3 of the range benchmarks.

7. TIMBER

Issues:

a. What should the sustained yield timber harvest for the Flathead National Forest be, recognizing basic land productivity, economics, community stability, and other resource needs?

b. What timber harvest, silvicultural, and reforestation methods should be used on the Flathead National Forest considering economics, energy, and ecological requirements?

c. What utilization standards should the Flathead National Forest require in order to achieve optimum utilization of all wood fiber?

d. How much access and availability of firewood for domestic and future commercial use should the Flathead National Forest provide?

Timber Harvest - The following tables display estimates of the theoretical timber harvest for the 150 years of the planning horizon. This projected amount of timber is based on those management prescriptions which specify a regulated timber harvest and are applied to tentatively suitable timberland. These projections are predicated on current knowledge, data, and management goals that may change during subsequent revisions of the Forest Plan.

The FORPLAN computer model calculated the programmed harvest and nondeclining evenflow using the cubic foot volumes. Table II-10 shows cubic foot volumes and reflects the FORPLAN model's scheduling of nondeclining evenflow.

Board foot volumes are shown in Table II-11. Based on species and diameter, the board foot volumes are converted from cubic foot volumes harvested. Thus the conversion factor can vary resulting in board foot schedules that do not exactly replicate the cubic foot schedules.

The composition of the average annual Decade 1 and 5 harvest volume by species and diameter class is displayed for the Preferred Alternative in Table II-12. This information is displayed as a result of public input on the draft, and other alternatives would exhibit only minor variations.

The Forest's 1981 RPA timber objectives average 119 MMBF per year for the first decade then increase progressively to 120, 135, 149, and 167 MMBF for Decades 2 through 5. Alternative 6 meets and exceeds the RPA objectives. Current Direction meets them for the first three decades and is close thereafter.

TABLE II-10 Decade 1 Scheduled Timber Harvest With Projections for Subsequent Decades - Millions of Cubic Feet Per Year - Flathead National Forest

	Decade														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Alternative															
1	20.3	23.4	26.9	30.9	35.6	35.6	35.6	35.6	35.6	35.6	35.6	35.6	35.6	35.6	35.6
2	28.8	28.8	34.6	41.5	42.1	42.1	42.1	42.1	42.1	42.1	42.1	42.1	42.1	42.1	42.1
3	25.1	25.1	30.1	36.1	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5
4	12.2	20.1	36.4	42.2	42.2	42.2	42.2	42.2	42.2	42.2	42.2	42.2	42.2	42.2	42.1
5	20.5	23.5	27.1	31.1	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8
6	34.7	33.7	34.8	41.8	41.9	41.9	41.9	41.9	41.9	41.9	41.9	41.9	41.9	41.9	41.9
7 CD	30.8	30.8	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5
8	25.0	25.0	29.5	35.4	40.6	40.6	40.6	40.6	40.6	40.6	40.6	40.6	40.6	40.6	40.6
9	25.2	25.2	25.2	30.3	36.4	39.8	31.8	25.5	27.2	32.6	35.6	28.5	27.4	32.9	29.3
10	19.7	22.6	26.1	30.1	34.4	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6	36.6
11	25.0	25.0	30.0	36.0	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3
12	25.0	25.0	28.8	34.6	40.3	40.3	40.3	40.3	40.3	40.3	40.3	40.3	40.3	40.3	40.3
13	25.0	25.0	28.2	33.8	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
14	25.0	25.0	27.3	32.7	39.2	39.2	39.2	39.2	39.2	39.2	39.2	39.2	39.2	39.2	39.2
15	25.0	25.0	26.5	31.7	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1
16	17.8	20.4	23.5	27.1	31.1	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9
17 PA	25.7	25.7	25.8	31.0	37.2	37.2	37.2	37.2	37.2	37.2	37.2	37.2	37.2	37.2	37.2
Departure	26.5	29.0	25.1	30.2	36.2	43.4	36.3	29.8	35.8	43.0	45.8	36.7	29.3	24.8	29.0
Benchmark															
PNV	25.3	25.3	30.3	36.4	43.6	52.4	58.7	46.9	37.5	40.0	32.0	30.4	35.1	32.2	25.8
Timber	42.8	42.8	42.8	44.6	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5	50.0	50.0

TABLE II-11 Decade 1 Scheduled Timber Harvest With Projections for Subsequent Decades - Millions of Board Feet Per Year - Flathead National Forest

	Decade														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Alternative															
1	82	98	115	130	151	149	136	135	134	142	143	137	141	144	132
2	116	119	145	161	177	172	159	160	162	168	168	155	172	172	157
3	101	105	129	141	160	160	147	148	145	156	158	153	153	152	148
4	51	86	151	175	176	176	162	164	160	173	164	157	173	174	154
5	82	99	115	129	151	151	135	137	137	142	143	128	147	147	132
6	145	134	149	170	175	161	160	159	163	164	170	157	169	165	161
7CD	132	122	167	143	161	149	149	146	148	154	157	157	155	150	151
8	100	103	127	137	166	170	155	155	152	164	166	164	160	160	152
9	103	97	106	125	146	155	121	97	102	131	144	112	108	133	117
10	80	95	112	125	144	155	140	139	141	143	148	138	145	142	143
11	99	105	128	140	157	161	145	149	145	156	158	153	154	151	149
12	100	103	124	134	165	169	153	154	151	163	165	162	159	159	150
13	100	102	121	131	164	167	153	153	150	161	163	161	158	158	149
14	100	103	117	126	160	165	149	149	147	159	160	158	153	155	147
15	99	103	114	122	156	160	144	145	142	154	156	154	147	151	142
16	71	82	94	108	124	132	132	132	132	132	132	132	132	132	132
17PA	101	106	111	119	152	156	141	142	138	152	152	151	143	146	137
Departure	104	117	108	116	148	177	136	112	134	177	188	148	113	101	114
Benchmark															
PNV	103	102	130	151	183	218	226	181	137	158	129	125	138	131	97
Timber	171	171	171	178	190	190	190	190	190	190	190	190	190	200	200

TABLE II-12 Decade 1 Average Annual Total Volume Northern Regional Guide Utilization Standards With Projections for Decade 5 - Flathead National Forest

D.B.H. CLASS		WP	WL	DF	GF	C	LPP	ES	AF	PP	OTH	ALL
6.0-6.9	1st Decade											
	MMBF	.000	.000	.000	.000	.000	.607	.000	.000	.000	.000	.603
	MMCF	.000	.000	.000	.000	.000	.261	.000	.000	.000	.000	.256
	5th Decade											
	MMBF	.000	.000	.000	.000	.000	1.018	.000	.000	.000	.000	1.018
	MMCF	.000	.000	.000	.000	.000	.415	.000	.000	.000	.000	.415
7.0-7.9	1st Decade											
	MMBF	.011	.157	.391	.014	.000	1.280	.616	.875	.000	.126	3.468
	MMCF	.004	.050	.160	.005	.000	.503	.207	.300	.000	.042	1.264
	5th Decade											
	MMBF	.028	.302	.556	.000	.004	1.303	.738	1.177	.000	.054	4.160
	MMCF	.008	.090	.214	.000	.001	.491	.245	.389	.000	.016	1.450
8.0-8.9	1st Decade											
	MMBF	.004	.102	.614	.000	.000	1.952	.688	1.120	.000	.366	4.841
	MMCF	.001	.031	.225	.000	.000	.677	.212	.351	.000	.116	1.608
	5th Decade											
	MMBF	.080	.685	.570	.001	.026	1.654	1.024	2.034	.000	.334	6.403
	MMCF	.023	.195	.199	.000	.009	.549	.308	.606	.000	.101	1.984
9.0-9.9	1st Decade											
	MMBF	.061	.157	.709	.082	.000	2.694	.507	1.106	.000	.489	5.804
	MMCF	.018	.046	.245	.027	.000	.840	.141	.329	.000	.150	1.793
	5th Decade											
	MMBF	.143	.796	1.039	.000	.016	1.523	1.879	1.911	.000	.251	7.557
	MMCF	.041	.221	.340	.000	.005	.444	.526	.538	.000	.073	2.182
10.0-10.9	1st Decade											
	MMBF	.152	.307	.669	.058	.000	2.200	1.258	.927	.037	.940	6.544
	MMCF	.045	.088	.220	.019	.000	.649	.314	.264	.013	.285	1.890
	5th Decade											
	MMBF	.150	1.198	1.281	.000	.026	1.869	2.213	2.163	.000	.320	9.218
	MMCF	.042	.326	.401	.000	.008	.524	.546	.585	.000	.092	2.522
11.0-11.9	1st Decade											
	MMBF	.170	.201	.715	.075	.027	2.211	.684	1.324	.013	1.307	6.725
	MMCF	.049	.057	.228	.023	.008	.633	.158	.367	.005	.390	1.914
	5th Decade											
	MMBF	.240	1.650	1.435	.003	.000	1.720	2.394	2.752	.000	.443	10.633
	MMCF	.066	.443	.435	.001	.000	.469	.537	.725	.000	.126	2.799
12.0-12.9	1st Decade											
	MMBF	.171	.173	.825	.000	.074	1.488	1.739	.761	.000	.582	5.808
	MMCF	.049	.049	.256	.000	.023	.416	.390	.206	.000	.172	1.557
	5th Decade											
	MMBF	.107	1.299	1.091	.001	.043	2.162	2.714	1.852	.001	.481	10.560
	MMCF	.028	.347	.562	.000	.013	.577	.580	.476	.000	.135	2.716

TABLE II-12 (Continued)

D.B.H. CLASS		WP	WL	DF	GF	C	LPP	ES	AF	PP	OTH	ALL
13.0-13.9	1st Decade											
	MMBF	.294	.160	1.075	.000	.034	2.828	1.089	.866	.000	1.371	7.712
	MMCF	.082	.045	.324	.000	.011	.776	.236	.230	.000	.398	2.097
	5th Decade											
	MMBF	.122	3.050	1.784	.002	.000	2.892	2.740	2.357	.001	.449	13.394
	MMCF	.031	.803	.512	.001	.000	.757	.567	.596	.000	.125	3.391
14.0-14.9	1st Decade											
	MMBF	.236	.383	.960	.000	.040	1.505	1.349	.836	.000	1.003	6.310
	MMCF	.061	.104	.266	.000	.012	.406	.286	.216	.000	.279	1.624
	5th Decade											
	MMBF	.291	2.416	1.045	.005	.000	1.800	3.635	1.536	.000	.377	11.102
	MMCF	.071	.606	.283	.001	.000	.463	.733	.371	.000	.100	2.624
15.0-15.9	1st Decade											
	MMBF	.282	.410	.719	.000	.019	1.031	2.079	.767	.000	1.266	6.570
	MMCF	.071	.102	.188	.000	.006	.275	.433	.193	.000	.324	1.587
	5th Decade											
	MMBF	.988	3.920	1.627	.002	.000	1.623	2.715	1.573	.000	.446	12.890
	MMCF	.236	.923	.408	.000	.000	.412	.538	.368	.000	.109	2.991
16.0-16.9	1st Decade											
	MMBF	.166	.211	.586	.000	.000	.469	1.152	.532	.000	.704	3.816
	MMCF	.042	.051	.149	.000	.000	.124	.236	.127	.000	.175	.902
	5th Decade											
	MMBF	.966	2.371	1.670	.000	.002	1.690	3.689	.998	.000	.113	11.495
	MMCF	.228	.549	.406	.000	.000	.424	.720	.225	.000	.027	2.574
17.0-17.9	1st Decade											
	MMBF	.224	.220	.409	.000	.012	.293	1.145	.336	.000	.169	2.807
	MMCF	.055	.052	.103	.000	.004	.077	.232	.077	.000	.041	.638
	5th Decade											
	MMBF	.907	3.169	1.448	.000	.004	1.408	2.839	.977	.000	.017	10.766
	MMCF	.211	.720	.343	.000	.001	.351	.546	.215	.000	.004	2.387
18.0-19.9	1st Decade											
	MMBF	.237	.804	1.828	.000	.005	.349	2.832	.592	.003	.508	7.152
	MMCF	.058	.189	.439	.000	.001	.091	.564	.134	.001	.123	1.594
	5th Decade											
	MMBF	1.780	3.536	1.854	.000	.034	1.053	4.455	1.369	.000	.047	14.125
	MMCF	.410	.788	.427	.000	.010	.258	.843	.294	.000	.011	3.037
20.0-20.9	1st Decade											
	MMBF	.189	1.865	1.605	.000	.000	.000	1.674	.511	.114	.100	6.056
	MMCF	.046	.412	.367	.000	.000	.000	.324	.111	.034	.022	1.313
	5th Decade											
	MMBF	2.725	1.406	1.880	.000	.029	.506	3.667	.421	.000	.015	10.646
	MMCF	.633	.299	.407	.000	.008	.128	.671	.089	.000	.003	2.233

TABLE II-12 (Continued)

D.B.H. CLASS		WP	WL	DF	GF	C	LPP	ES	AF	PP	OTH	ALL
22.0-23.9	1st Decade											
	MMBF	.002	1.153	1.385	.000	.039	.000	2.258	.529	.273	.108	5.745
	MMCF	.000	.260	.312	.000	.012	.000	.432	.121	.077	.023	1.233
	5th Decade											
	MMBF	1.193	.060	2.041	.000	.015	.000	2.305	.511	.002	.044	6.167
	MMCF	.278	.013	.437	.000	.004	.000	.419	.114	.001	.009	1.272
24.0-25.9	1st Decade											
	MMBF	.087	2.525	1.351	.000	.015	.000	2.148	.123	.000	.399	6.645
	MMCF	.021	.585	.303	.000	.004	.000	.412	.029	.000	.085	1.438
	5th Decade											
	MMBF	1.590	.370	.756	.000	.000	.000	1.151	.312	.006	.384	4.565
	MMCF	.371	.083	.161	.000	.000	.000	.210	.072	.001	.078	.975
26.0-27.9	1st Decade											
	MMBF	.154	1.275	1.054	.000	.000	.000	1.258	.000	.230	.114	4.082
	MMCF	.038	.304	.236	.000	.000	.000	.241	.000	.056	.024	.896
	5th Decade											
	MMBF	1.455	.279	.175	.000	.000	.000	.710	.096	.001	.055	2.769
	MMCF	.340	.063	.037	.000	.000	.000	.130	.024	.000	.011	.599
28.0-29.9	1st Decade											
	MMBF	.259	.768	.888	.000	.070	.000	.909	.010	.277	.000	3.181
	MMCF	.064	.189	.199	.000	.022	.000	.174	.003	.064	.000	.710
	5th Decade											
	MMBF	.259	.664	.075	.000	.000	.000	.283	.104	.003	.006	1.394
	MMCF	.061	.154	.016	.000	.000	.000	.052	.026	.001	.001	.308
30.0 +	1st Decade											
	MMBF	.013	2.101	.604	.000	.000	.000	2.909	.009	.396	.041	6.073
	MMCF	.003	.528	.134	.000	.000	.000	.555	.003	.088	.009	1.316
	5th Decade											
	MMBF	.534	1.291	.408	.000	.003	.000	.758	.051	.014	.030	3.087
	MMCF	.125	.308	.087	.000	.001	.000	.138	.014	.003	.006	.677
TOTAL	1st Decade											
	MMBF	2.713	12.974	16.387	.229	.333	18.908	26.297	11.227	1.343	9.592	100.000
	MMCF	.709	3.140	4.354	.074	.103	5.727	5.546	3.061	.337	2.657	25.701
	5th Decade											
	MMBF	13.558	28.463	21.546	.014	.203	22.220	39.910	22.195	.026	3.866	152.000
	MMCF	3.203	6.931	5.674	.004	.061	6.261	8.307	5.723	.006	1.028	37.191

Alternatives 9-17 try to maintain the timber harvest objectives associated with comparable nonwilderness alternatives. Benchmark analysis has shown that the full range of short-term (Decade 1) timber harvest objectives displayed in Alternatives 1-8 can be supported on the reduced timber base even if all Flathead National Forest roadless areas are wilderness; however, long-term effects on timber yields are proportional to suitable timber acres added to the wilderness system. Fertilization of forest tree stands and use of improved genetic planting stock are practices which may prove to be a reliable means of increasing per acre timber yield. Practices such as these would be necessary to mitigate reduction in suitable acres.

Suitable Acres - Suitable acres are those acres on which timber management practices will be scheduled over time to accomplish resource management objectives. The suitability analysis for the Flathead was conducted according to NFMA regulations and is detailed in Appendix B. Total acres suitable for timber management are shown in Figure II-10 for alternatives and benchmarks. Alternatives and benchmarks evidence a reduction in suitable acres from the Forest total of 835,747 tentatively suitable acres due to economic efficiency analyses and/or land designations necessary to meet other resource management objectives.

The timber benchmark and Current Direction have no economically unsuitable acres, the benchmark due to the maximize timber objective and Current Direction due to the land designations specified by Unit Plans and District Multiple-Use Plans*.

Economically unsuitable acres in the PNV benchmark totaled 112,617 acres with a departure schedule. The difference in suitable acres between the PNV Benchmark and the alternatives is due to multiple-use objectives causing the suitable timber base to change from the economically optimal amount. In some cases, more suitable acres are required to meet alternatives with high timber output objectives such as Alternative 2 and 6. In other alternatives, the differences between alternatives reflected in Figure II-10 is due to designations of land as management prescriptions where timber harvest is not compatible with the management objectives. Changes from the PNV suitable acres results in a tradeoff of PNV.

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* Suitable acres considered in Forest planning are not synonomous with the classification "regulated commerical forest land," which was used by the Forest Service prior to this planning process. Thus, the commercial forest land identified in the 1969 Timber Management Plan is not comparable to the suitable land base considered here. Commercial forest land often included areas that site specific analysis would find not capable of, or suitable for, timber production. The suitability analysis required that the general category of commerical forest land be translated into analysis areas, not all of which were found to be specifically suitable for timber management given the management objectives, landtype group, and economic analyses.

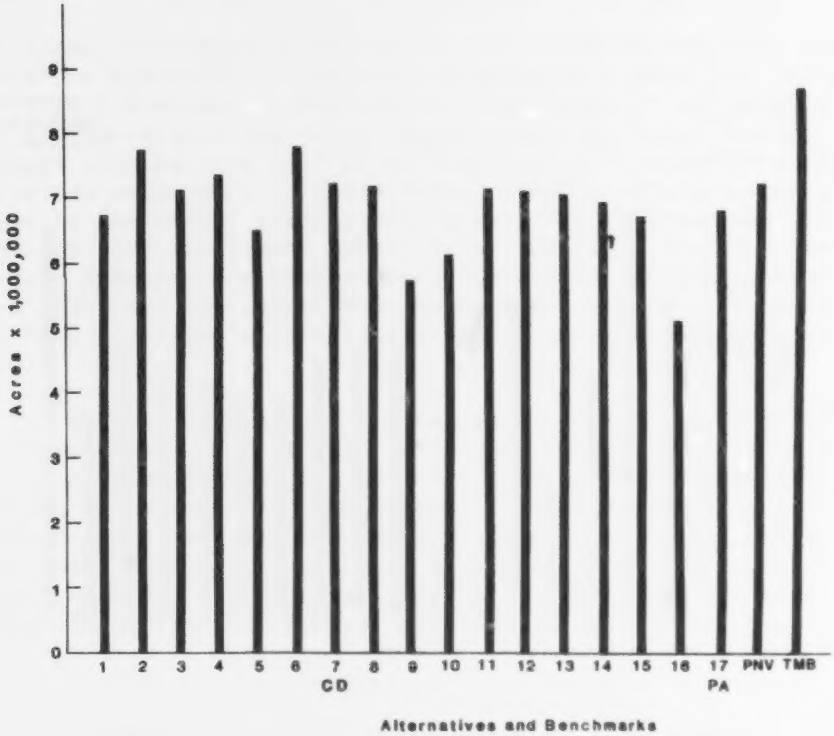

Figure II-10. Suitable Productive Timber Land

Flathead National Forest

In general, the more tentatively suitable acres that are added to the National Wilderness Preservation System, the smaller the suitable land base for timber because wilderness additions would include some potential commercial timberlands. The Preferred Alternative will schedule timber harvest on approximately 51,000 fewer suitable acres than the Current Direction.

Lodgepole Pine Harvest - Figure II-11 summarizes the average annual acres of lodgepole pine scheduled for harvest for the first three decades, reflecting the alternatives' use of timber harvest to deal with the mountain pine beetle problem. The Forest silviculturist places the minimal level of harvest for the first decade at about 1,900 acres per year to salvage the majority of expected tree mortality in the high risk areas. Alternatives 4, 6, and Current Direction fall far short of this objective as a result of emphasis on maximizing PNV. Alternative 2 maximizes salvage of beetle-impacted stands. Alternative 17 increases the lodgepole pine harvest from that planned in Alternative 11 to 2,900 acres per year, second highest of all alternatives.

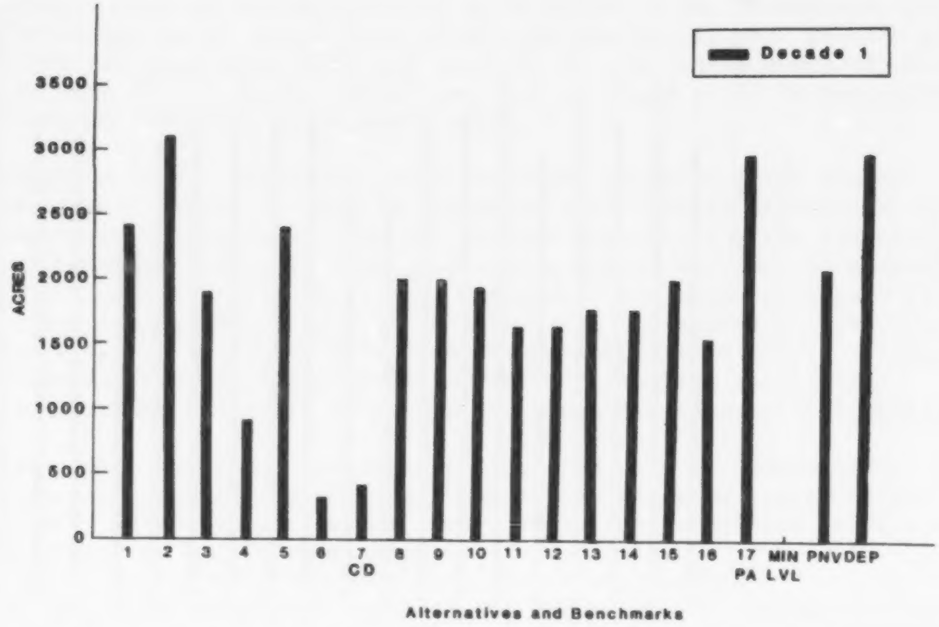

Figure II-11. Average Annual Scheduled Lodgepole Pine Harvest

Flathead National Forest

Intermediate Harvest - Alternatives that attempt to maintain relatively high timber outputs (Alternatives 2, 3, 8, Current Direction, and the Timber and PNV Benchmarks) generally require an annual intermediate harvest program of at least 2,000 acres per year, more than double the existing program. The Timber Benchmark schedules almost 7,000 acres of intermediate harvest in the first decade, while Alternatives 2 and 3, Current Direction, the PNV benchmark, Alternative 11-15, and Alternative 17 schedule between 2,000 and 2,500 acres.

With the objective of maximizing dollar revenues, Alternative 4 does not find any intermediate harvest program economically attractive. Alternatives 1 and 5 schedule 1,200 and 1,500 acres respectively. Alternative 6, with a large, generally unconstrained suitable land base, does not need intermediate harvest to meet timber volume objectives.

Silvicultural Systems - Three silvicultural methods for regeneration harvest of timber are appropriate for the Flathead National Forest: selection/group selection, clearcutting (which includes seed tree cutting), and shelterwood.

In most cases, even-aged silviculture (shelterwood, clearcut, and seed tree) will be practiced to achieve the management objectives of the alternatives. Even-aged management provides the closest parallel to natural processes occuring within the Flathead National Forest. Uneven-aged silviculture will be used primarily in riparian areas and other special areas such as those where retention of the current landscape is the visual quality objective. The silvicultural system designed for each management prescription considers landtype and habitat types, tree species, and timber condition class.* Final determination of which silvicultural system will be used for a particular project will be made by a certified silviculturist after an on-the-ground site analysis.

Due to the natural adaptation of plant and animal species of the Flathead National Forest to fire influenced even-aged ecosystems, there is only a relatively small portion of the Forest that is suitable for application of uneven-aged silviculture. As a result of considering social, ecologic, and economic limitations of uneven-aged silviculture, no alternative features uneven-aged silviculture as the primary timber management method. See Chapter IV for a more detailed discussion of silvicultural systems and harvest methods.

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* For further information see, "The Rules for Assigning Management Prescriptions to Analysis Areas," Flathead National Forest planning records, and Forest Plan Appendix I, Habitat Type Guidelines, and Appendix Q, Landtype Guidelines.

Timber Utilization Standards - The Northern Region has identified desirable utilization standards* for use by the Region 1 National Forests. All alternatives reflect revised utilization standards that were prescribed for use in the Northern Regional Guide as listed below:

Species	Minimum d.b.h.	Minimum Piece Size	Minimum Top d.i.b.	Percent Sound
Lodgepole Pine	6.0 inches	8 feet	4.6 inches	25
All Other Species	7.0 inches	8 feet	4.6 inches	25

Utilization standards for dead trees will be:

Species	Minimum d.b.h.	Minimum Piece Size	Minimum Top d.i.b.	Percent Sound
Lodgepole Pine	8.0 inches	16 feet	7.0 inches	33-1/3
All Other Species	8.0 inches	8 feet	7.0 inches	33-1/3

Utilization standards for utility trees for pulp will be:

Species	Minimum Piece Size	Minimum Top d.i.b.	Percent Sound
Any Species	12 feet	5.6 inches	50% pulpable

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* To meet utilization standards, trees must equal or exceed specified tree diameters that are measured at breast height (d.b.h.) and at the top of the tree inside the bark (top d.i.b.). Another standard used is the percent "soundness" of the wood, or the percent of usable material.

The results of an analysis of the volume and economic value impacts of converting from the current utilization standards to those in the Northern Regional Guide are shown in Table II-13 and Table II-14 for the Maximum PNV Benchmark and the Preferred Alternative.

TABLE II-13 Comparison of Current vs. Northern Regional Guide Utilization Standards - Flathead National Forest

	Minimum d.b.h.		Minimum top d.i.b.	Minimum Piece Length
Standard	Lodgepole Pine	All Other Species	All Species	All Species
Current	7"	8"	5.6"	8'
Proposed	6"	7"	4.6"	8'

TABLE II-14 Comparison of Timber (MCF and MBF), Present Net Value and Acres Assigned to Timber Between the Current and Northern Regional Guide Utilization Standards - Flathead National Forest

Item	Current Stds.	Proposed Stds.	Difference	% Change
Max PNV Benchmark:				
MMCF	23.6	25.3	1.6	6.4%
MMBF	97.7	103.5	5.8	5.6%
PNV	540.5	605.5	65.0	10.7%
Acres Assigned to Timber	723,130	725,560	+2,430	0.3%
Preferred Alternative:				
MMCF	24.2	25.7	1.5	5.8%
MMBF	95.3	101.0	5.7	5.6%
PNV	427.3	483.0	55.7	11.5%

Firewood - In all alternatives, firewood is a significant Forest resource. Alternatives maximize the amount of firewood available to the public through use of a Forest-wide permit. Fees are now charged for both commercial and personal use firewood permits. All temporary roads on commercial sawtimber sales which access sufficient amounts of firewood would be kept open to the public for a period of time not exceeding 1 year after sale termination unless road restrictions are necessary to meet other resource management objectives (for example, winter range or grizzly bear habitat management or protect the soil and water resources). Sufficient amounts of firewood are defined as volumes in excess of that needed for nutrient cycling and wildlife, which are readily accessible to the temporary road and which would supply a reasonable amount of material to the wood gatherer. Commercial wood sales would generally be made in those areas not readily accessible to individuals or where logging equipment is required.

Total firewood available varies by alternative and is dependent upon total timber volume harvested, total miles of road constructed, and the road management program.

8. WATER

Issue: To what extent can the Flathead National Forest coordinate management activities on National Forest System lands with adjacent private lands to protect and maintain the quantity and quality of the water resource?

Under any alternative, Flathead National Forest personnel will exchange information periodically with adjacent and intermingled landowners to discuss management plans and identify potential problem areas. Projects will be reviewed and coordinated to gain informal agreement on program changes or mitigation measures to meet State water quality standards.

Risk of degrading water quality from management of the Forest comes primarily from increases in sediment. These increases are usually from ground disturbing activities (i.e., road building or road maintenance) and from increases in water yield from timber harvest activities.

Other activities that may contribute to increased water yield are the clearing associated with road construction, timber harvest, and mineral development; grazing; slash disposal; and site preparation following timber harvest.

The actual risk of increasing sediment yield will vary depending on the amount of soil disturbed, type of timber harvest treatment, soil material, and various other physical, chemical, and biological factors. As roads stabilize and disturbed sites revegetate, sediment production decreases. Most sediment production decreases to almost none within 5 years of the disturbance. Continuing sediment production occurs at a low level as roads are used and maintained.

Table II-15 displays the relative sediment risk ranked by alternative. Using road construction miles and acres suitable for timber production as the principal indicators, the alternatives are ranked as to their relative risk of affecting water related beneficial uses, based on significant difference in sediment production potential. The alternatives ranked as 1 have the least risk of affecting such uses. In response to comments on the draft documents from the State of Montana, the U.S. Environmental Protection Agency, and the public, this method of alternative comparison represents a change from that used in the Draft EIS. This methodology is more useful because it does not rely on calculations of water and sediment yields with unknown statistical reliability.

Management practices would be used in all alternatives to carry out activities and to assure that they would accomplish Forest Plan goals, one of which is to meet or exceed State water quality standards. These practices are referred to as Best Management Practices. Due to their higher sediment production potentials, it would be more costly to meet Forest water quality goals for Alternatives 6 and 7, and there would be a greater risk that water quality might be adversely impacted in spite of application of best management practices.

Alternative 17 represents a reasonable level of risk in relation to the net public benefits produced. No violation of State water quality standards is foreseen and risk of adverse effects are considerably reduced compared to Current Direction. The effects of sediment production on beneficial uses of water will be evaluated during project development to ensure meeting State water quality standards. Projects that will not meet these standards will be redesigned, rescheduled, or dropped.

9. MINERALS

Issue: Where, how much, and under what conditions should the Flathead National Forest provide for oil and gas exploration and development?

For all alternatives, Forest administration of mineral activities will be in accordance with the 1872 Mining Law, the 1920 Mineral Leasing Act, the 1969 National Environmental Policy Act, the Federal Land Planning, and Management Act of 1976, and 36 CFR 252. Locatable (hardrock) mineral potential is generally low throughout the Forest and it was not reflected in a public issue or concern. Any hardrock activities that might develop would be managed under operating plans with surface resource value mitigated or protected within the provision of the laws governing mineral activity on National Forest System lands. The alternatives' resource objectives do not alter existing oil and gas lease contracts. The desired future conditions for specific portions of the Forest, however, might indicate either that reissuance of the lease would call for more restrictive stipulations, or existing restrictive stipulations may be dropped. New leases and subsequent lease reissuance will undergo additional analysis as required by NEPA, tiering to this EIS by incorporating by reference the information presented in this EIS.

For each alternative, Table II-18 displays total acres where oil and gas exploration and development would be restricted by special stipulations due to the alternatives' resource management objectives and land designations. The PNV and Minimum Level Benchmarks, Current Direction, and Alternatives 2, 4, and 6 would impose the fewest restrictions on oil and gas access and activities. In these benchmarks and alternatives, resource objectives are oriented toward development of commodity resources. Also, there are few land designations that would restrict oil and gas activities.

TABLE II-15 Estimated Relative Sediment Risk: Alternative Ranking - Flathead National Forest

Alternative	Total* Road Miles	Ripar.	Acres Suitable For Timber Production (Thousand Acres)** Low	Low+	Mod	H	Total	Projected Livestock Grazing (M AUMs) 5th Decade***)
16	5672	-0-	106.5	165.2	146.9	93.4	512.0	4.8
9	5404	-0-	126.3	189.2	166.8	95.8	578.1	6.7
10	5898	-0-	120.7	196.7	167.7	127.2	612.3	5.9
5	6066	-0-	124.9	197.8	191.9	136.6	651.2	5.9
15	5863	7.5	125.4	201.1	185.9	150.7	670.6	6.2
17 PA	5917	10.7	124.8	194.9	187.3	153.0	670.7	6.2
Departure	5917	10.7	124.0	195.1	186.9	154.0	670.7	6.2
1	6088	-0-	130.4	206.2	189.7	146.7	673.0	4.8
14	5929	9.0	129.1	206.0	183.1	159.4	686.6	6.2
13	5986	9.0	131.5	209.4	195.3	162.1	707.3	6.2
12	6002	9.0	133.7	217.4	184.1	170.4	714.7	6.2
3	6106	9.0	128.7	209.2	191.6	176.8	715.3	6.2
11	6021	9.0	119.4	196.5	180.0	212.4	717.3	6.2
8	6026	9.0	122.3	213.0	204.4	171.5	720.2	6.2
7 CD	6601	33.3	114.6	210.3	179.1	184.3	721.8	6.4
4	6288	-0-	132.0	219.9	201.1	183.9	736.9	5.7
2	6316	23.6	132.3	217.9	206.2	194.8	775.0	6.4
6	6748	-0-	135.9	226.7	214.2	203.1	779.7	10.7

* Includes 3146 miles of existing road.

** LEGEND		
	Low	Under 40% slopes, low soil sensitivity (-40, -40SSW, -40NS)
	Low+	Under 40% slopes, moderate soil sensitivity (-40SC)
	Mod	40 to 60% slopes, nonsensitive moderate sensitivity (+40, +40SRD, +40NS)
	H	Over 60% slopes (+60NS)
	Ripar.	Riparian Areas (RIPARN)

*** Decade 5 projections are used as an appropriate index of livestock use potential of alternatives.

The Mt. Hefty, Tuchuck, Thompson Seton, and Le Beau roadless areas are the only nonwilderness areas on the Flathead National Forest which have not had oil and gas lease applications processed. Lease processing for these areas would be guided by the surface and mineral resource objectives for each alternative. Alternatives in which these roadless areas are recommended for wilderness would have the leasing deferred, rejected, or processed subject to stipulations resulting from congressional action on the wilderness recommendations. Under alternatives in which the areas are designated as nonwilderness objectives, the surface management direction and mineral management needs would guide lease processing and stipulations. In all areas but the Le Beau area, maintenance and improvement of grizzly bear habitat and population is the primary concern of the area.

Leasing will be recommended in accordance with the management area direction for each alternative. For example, in an area assigned to Roadless Dispersed Recreation, the management direction specifies that all surface management activities must maintain the roadless resource of the area. Oil and gas exploration and development activities would also be designed to minimize conflicts with the surface management objectives of maintaining a roadless resource. Areas of steep slopes are usually protected by nonsurface occupancy stipulations in oil and gas leases. Most areas leased in occupied grizzly bear habitat will have Threatened and Endangered Species lease stipulations, which incorporate any limitations deemed necessary through application of the Grizzly Bear Management Guidelines and biological assessments at the project level.* Before actions are recommended on any lease application, additional site-specific environmental analyses will be done.

The processing of oil and gas lease applications as described for nonwilderness designations will proceed for the Le Beau area. For the Mt. Hefty, Tuchuck, and a large portion of the Thompson Seton roadless areas, the Forest would propose to withdraw these areas from mineral entry subject to valid existing rights for 10 years. During this time, additional research and study of the grizzly's reaction to man's activities will be conducted. These three areas represent some of the best known grizzly bear habitat in the lower 48 States, and the preservation of this habitat and the bear population will be the primary use of these areas as part of the Proposed Trail Creek Grizzly Bear Management Area.

Roadless areas recommended for wilderness which are currently under lease contracts will be allowed to run their term. Congress could elect to terminate the leases if necessary to preserve the wilderness values but the cost would be high. Operating costs for oil and gas activities on existing leases within new wilderness areas could be higher due to the increased efforts and mitigation measures needed to preserve the wilderness values. New mitigating measures would conform with stipulations in existing leases. New stipulations could not be unilaterally imposed by the Government.

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* Some areas leased prior to establishment of the present occupied boundary do not contain these stipulations.

Alternatives 3, 8, 11-15, and 17 represent moderate levels of potential restrictions on oil and gas activities and access due to their roadless recreation and grizzly bear habitat land designations.

Alternatives 1, 5, 9, 10, and 16 designate more acres as grizzly bear, wilderness, or roadless management and have conservative road access objectives; therefore, potential restrictions on oil and gas activities would be highest in these alternatives.

10. LANDS

Issues:

a. To what extent should the Flathead National Forest adjust and consolidate landownership in order to support resource management and improve management efficiency?

b. How should the Flathead National Forest deal with the impacts created by activities on private land inholdings?

Land adjustment would be accomplished in response to the resource objectives and land designation patterns associated with each alternative. The objectives of any landownership adjustment program would be to improve the Forest's ability to meet the management intent of an alternative.

In all alternatives, the Forest Supervisor will recognize the need to work with local governments and private landowners in planning to decrease impacts created by activities on private land inholdings and these proposed management activities on Forest lands that may adversely impact private lands.

11. SOILS

Issue: What level of management activities should take place on the Flathead National Forest while protecting the soil resource?

Soil is the basic resource which determines productivity of the Forest. The NFMA regulations require that management prescriptions not allow significant or permanent impairment of the productivity of the land. Management guidelines define management practices to be used on different landtypes that will maintain soil productivity.*

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* Landtype guidelines designed to protect soil productivity are presented as Appendix Q in the Forest Plan.

Under all alternatives, activities would be implemented using the appropriate guidelines to ensure protection of the soil resource.

Some soil productivity loss is unavoidably associated with Forest management, in particular timber harvest activities. Soil loss, associated with road construction and maintenance occurs as erosion that enters the water as sediment, is discussed in the WATER sections. Under all alternatives, mitigation measures are incorporated that reduce the amount and impacts of erosion.

12. ROADS

Issue: How shall the Flathead National Forest roads be constructed, managed, and maintained to best meet resource needs within sound environmental, economic, and social considerations?

Existing miles of roads, estimated miles of additional roads needed, and projected Decade 1 construction are displayed in Figure II-12 for all alternatives and the Timber, PNV, and Minimum Level Benchmarks. For all alternatives, the arterial* road system is complete, while collector* road requirements are 98 percent complete. Nineteen more miles of collector roads are needed for all alternatives except Alternative 5. Alternative 5 does not provide for development of certain roadless areas where timber could be managed, thereby reducing the need for additional collector road construction. The majority of roads constructed in all alternatives would be local* roads.

The relatively minor variations between alternatives are dependent upon variations in land designations and logging systems.

The miles of road required per alternative in any given decade are a function of yarding systems used on unroaded acres scheduled for harvest. Purchasers receive "credits" toward the sale price of timber in return for building these roads. The timber volume determines, in part, the miles of road construction that the timber value can support. Road costs above those supported by timber values are paid for by the Forest Service with the use of U.S. Treasury funds appropriated by Congress. These appropriated funds are administered through the Capital Investment Program and the Timber Sale Contributed Fund Program. The relationship between credits and appropriated funds required is dependent upon the value of timber and respective road costs for individual timber sales.

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* Arterial, collector, and local are classes of Forest Service system roads defined in the glossary.

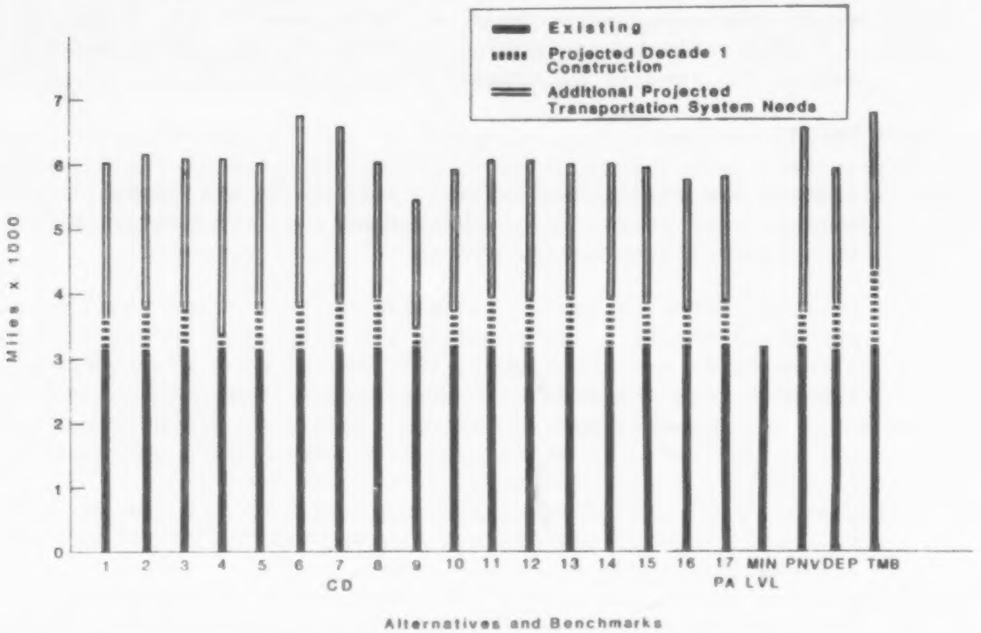

Figure II-12. Total Roads Needed-Existing and To Be Constructed

Flathead National Forest

Table II-16 displays construction costs and shows that each alternative varies by decade in the amount of timber credits and appropriated dollars needed. These variations result from the economic efficiency objective function of the computer model in conjunction with the resource objectives of each alternative.

Costs for road reconstruction, Forest Service maintenance, and engineering are also displayed in Table II-18. Road reconstruction is assumed to be constant for all alternatives for the first five decades at 17 miles per year. Thereafter, 5 miles per year are reconstructed. Maintenance and engineering costs are directly related to the number of miles of road built per decade.

Roads to be constructed are included in FORPLAN as a linear relationship proportional to harvest acres scheduled for the initial entry on each analysis area. The amount and cost of road to be built depends on the existing road density and the logging system to be used for various analysis areas. FORPLAN economic analysis data indicate analysis areas in the suitable timber base with positive overall priced benefits also have a negative cash flow in Decade 1. The initial investment in

Table II-16 Decade 1 Road Costs With Projections for Subsequent Decades (Millions of Dollars Per Year) - Flathead National Forest

Output/Activitiy	Alternative 1	2	3	4	5	6	7CD	8	9	10	11	12
TOTAL ROAD CONSTRUCTION COSTS												
Decade 1 ---------------->	1.59	2.25	2.21	.86	1.92	2.18	2.46	2.39	0.94	1.77	2.55	2.52
2	1.45	1.98	1.55	1.12	1.62	3.29	2.29	1.61	1.41	1.45	1.60	1.59
3	1.72	2.46	1.77	2.56	1.90	2.42	3.11	1.79	1.32	1.77	1.84	1.82
4	2.35	2.95	2.16	3.38	2.86	3.62	3.28	2.17	1.99	2.85	2.19	2.17
5	2.78	1.22	1.34	1.98	1.43	1.01	.77	1.59	1.89	1.02	1.60	1.59
APPROPRIATED FUNDS												
Decade 1 ---------------->	.82	.99	1.15	.54	1.14	.51	1.00	1.36	0.00	1.03	1.49	1.45
2	.44	.67	.44	.28	.60	1.79	.97	.54	0.33	0.51	0.40	0.46
3	.47	.78	.32	.80	.64	.69	1.14	.37	0.15	0.68	0.38	0.53
4	.89	1.05	.53	1.26	1.41	1.64	1.67	.60	0.61	1.74	0.62	0.61
5	1.01	0	0	0	0	0	0	0	0.28	0	0	0
PURCHASER CREDITS												
Decade 1 ---------------->	.77	1.26	1.06	.32	.78	1.66	1.46	1.03	0.94	0.74	1.06	1.07
2	1.01	1.31	1.11	.84	1.02	1.50	1.32	1.07	1.08	0.94	1.20	1.13
3	1.25	1.68	1.45	1.76	1.26	1.73	1.97	1.42	1.17	1.09	1.46	1.29
4	1.46	1.90	1.63	2.12	1.45	1.98	1.61	1.57	1.38	1.11	1.57	1.56
5	1.77	1.22	1.34	1.98	1.43	1.01	.77	1.59	1.61	1.02	1.60	1.59
RECONSTRUCTION COSTS (average for all decades)	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
TOTAL CAPITAL INVESTMENT IN ROADS												
Decade 1 ---------------->	2.1	2.8	2.7	1.4	2.4	2.7	3.0	2.9	1.4	2.3	3.1	3.0
2	2.0	2.5	2.1	1.5	2.1	3.8	2.8	2.1	2.1	2.0	2.1	2.1
3	2.2	3.0	2.3	3.1	2.4	2.9	3.6	2.3	1.8	2.3	2.3	2.3
4	2.9	3.5	2.6	3.9	3.4	4.1	3.8	2.7	2.5	3.4	2.7	2.7
5	3.3	1.7	1.8	2.5	1.9	1.5	1.3	2.1	2.4	1.5	2.1	2.1
FRT MAINTENANCE												
Decade 1 ---------------->	.15	.15	.15	.07	.14	.15	.15	.16	1.3	1.4	1.4	1.4
2	.44	.44	.42	.24	.39	.50	.45	.44	1.5	1.6	1.7	1.7
3	.74	.74	.66	.49	.65	.87	.79	.68	1.7	1.8	1.9	1.9
4	1.09	1.09	.93	.88	.97	1.25	1.18	.95	1.9	2.2	2.2	2.2
5	1.38	1.38	1.18	1.24	1.27	1.56	1.44	1.22	2.2	2.4	2.5	2.5
ENGINEERING COSTS												
Decade 1 ---------------->	1.1	1.4	1.4	0.7	1.3	1.3	1.4	1.5	0.7	1.2	1.6	1.6
2	1.0	1.2	1.1	0.8	1.1	1.9	1.3	1.1	1.0	1.0	1.1	1.1
3	1.1	1.5	1.2	1.6	1.2	1.5	1.7	1.2	0.9	1.2	1.2	1.2
4	1.5	1.8	1.4	2.0	1.8	2.1	1.8	1.4	1.3	1.8	1.4	1.4
5	1.7	0.9	0.9	1.3	1.0	0.7	0.6	1.1	1.2	0.8	1.1	1.1

Table II-16 (Continued)

	Alternative						Benchmarks		
Output/Activitiy	13	14	15	16	17PA	Departure	MINLVL	PNV	TIMBER
TOTAL ROAD CONSTRUCTION COSTS									
Decade 1 ------------------------>	2.49	2.46	2.39	2.21	2.55	2.55	0	1.81	4.04
2	1.57	1.54	1.50	1.37	1.52	1.52	0	2.14	2.10
3	1.80	1.77	1.72	1.58	1.75	1.75	0	2.00	2.28
4	2.15	2.11	2.06	1.89	2.10	2.10	0	2.95	1.81
5	1.57	1.54	1.50	1.37	1.52	1.52	0	2.81	1.81
APPROPRIATED FUNDS									
Decade 1 ------------------------>	1.45	1.45	1.39	1.42	1.50	1.50	0	0.61	2.14
2	0.41	0.39	0.33	0.48	0.32	.32	0	1.02	.14
3	0.46	0.44	0.43	0.54	0.49	.49	0	0.57	.31
4	0.71	0.73	0.71	0.73	0.77	.77	0	1.24	0
5	0	0	0	0	0	0	0	0.67	0
PURCHASER CREDITS									
Decade 1 ------------------------>	1.04	1.01	1.00	0.79	1.05	1.05	0	1.20	1.90
2	1.16	1.15	1.17	0.89	1.20	1.20	0	1.12	1.96
3	1.34	1.33	1.29	1.04	1.26	1.26	0	1.43	1.97
4	1.44	1.38	1.35	1.16	1.33	1.33	0	1.71	1.81
5	1.57	1.54	1.50	1.37	1.52	1.52	0	2.14	1.81
Reconstruction Costs (average for all decades)	.5	.5	.5	.5	.5	.5	0	.5	.5
TOTAL CAPITAL INVESTMENT IN ROADS									
Decade 1 ------------------------>	3.0	3.0	2.9	2.7	3.1	3.0	0	2.3	4.5
2	2.1	2.0	2.0	1.9	2.0	2.7	0	2.6	2.6
3	2.3	2.3	2.2	2.1	2.3	2.3	0	2.5	2.8
4	2.7	2.6	2.6	2.4	2.6	2.6	0	3.5	2.3
5	2.1	2.0	2.0	1.9	2.0	3.0	0	3.3	2.3
FRT MAINTENANCE									
Decade 1 ------------------------>	1.4	1.4	1.4	1.4	1.4	1.4	0	1.4	.25
2	1.7	1.7	1.7	1.6	1.6	1.6	0	1.6	.65
3	1.9	1.9	1.9	1.8	1.8	1.7	0	1.9	.94
4	2.2	2.2	2.2	2.1	2.0	2.0	0	2.2	1.23
5	2.5	2.4	2.4	2.3	2.2	2.2	0	2.6	1.48
ENGINEERING COSTS									
Decade 1 ------------------------>	1.5	1.5	1.5	1.4	1.3	1.2	0	1.2	2.3
2	1.1	1.0	1.0	1.0	0.8	0.8	0	1.3	1.3
3	1.2	1.2	1.1	1.1	0.9	0.9	0	1.3	1.4
4	1.4	1.3	1.3	1.2	1.1	1.1	0	1.7	1.2
5	1.1	1.0	1.0	1.0	0.8	0.8	0	1.7	1.2

developing a transportation system in unroaded stands is usually the factor responsible for costs being more than revenues in Decade 1. This indicates that there is a high probability that some below-cost timber sales will be necessary especially in Decade 1 to achieve overall multiple-use objectives and maximize net public benefits over the long term. Emphasis on economic analysis and cost efficiency at the project level is featured in Alternative 17 in order to minimize below-cost sales. Roads needed for Alternative 17 show a small increase over Alternative 11 due to additional acres of lodgepole pine scheduled for harvest in Decade 1.

Road Management - Alternatives vary in availability of motorized public access via roads.

No alternative provides less public access than is currently available. The amount of additional public motorized access is dependent upon the total miles of road needed and the resource management objectives of the alternative. A road management program for each alternative would protect public safety, and soil and water, and meet management objectives for wildlife and recreation resources. All the alternatives protect public safety, and soil and water; however, they differ in the wildlife and recreation resource objectives.

Alternatives 1, 5, 10, and 16 offer the most protection to wildlife, provide opportunities for roadless dispersed recreation, and take a conservative orientation toward land management. This combined with fewer total road miles needed than other alternatives produces the fewest miles of open roads at full development. Alternative 17, the Preferred Alternative, provides for the lowest average open road density even though more total miles of road will exist at full development. This is a result of the high level of support for road management expressed in the public comments on the Draft EIS.

Alternatives 2, 4, and 6 minimize traffic control and provide for the greatest degree of unrestricted access, resulting in relatively few road closures at full development.

All alternatives will provide the greatest possible level of public access commensurate with promoting public safety, protecting resources, and minimizing user conflicts.

Under all alternatives, road standards would be established through the Forest Plan and Area Transportation Planning, which includes detailed logging system planning at the project level. This coordination assures that the necessary standard of road will be provided in the right location to serve immediate and future projects. Standards would be established that provide the access needed to meet the management objectives of the alternative for the lowest cost.

13. PROTECTION - FIRE

Issue: Fire - What fire management activities are appropriate on different areas of the Flathead National Forest?

The Forest Service has developed fire management zones* which describe the types of fire management activities that will occur to protect and/or enhance the resource values of that area. Variation between the alternatives and benchmarks occurs in the operational, observational, and special acres. Protected acres, where all unplanned fires are attacked immediately to gain control as soon as possible, do not vary between alternatives. Wilderness acres are managed for fire under separate approved Wilderness Fire Plans, Level II, for the Bob Marshall and Great Bear Wildernesses.

14. PROTECTION - INSECT AND DISEASE

Issue: How should the Flathead National Forest prevent or mitigate insect and disease damage to the resource and economic values?

The effects of alternatives on the Forest management's ability to deal with insect and disease problems are considered in the summary of the changed environment and in the environmental consequences of the land designations and resource objectives for each alternative. Insect and disease hazard and risk are discussed in Chapter IV.

15. ENERGY CONSUMPTION

The estimated energy consumption by alternative displayed in Table II-17 is based upon energy used for timber harvest, administration, road construction, grazing, and recreation. These estimates were developed in terms of gallons of gasoline and diesel fuel used. Energy consumption related to timber production accounts for the vast majority of the average annual use associated with each alternative. These energy consumption estimates should be used for comparison purposes only; they are not refined projections of energy use.

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* Fire management zones are a valid geographical designation for providing fire management direction until the Forest Plan is approved. At that time, direction will be specified in management area direction and/or Forest-wide guidelines. Until then, fire management zones are useful for comparison purposes.

TABLE II-17 Average Annual Net Energy Consumption in Billion BTU's* - Flathead National Forest

	Decade				
ALTERNATIVE	1	2	3	4	5
1	1016	1209	1411	1589	1847
2	1438	1471	1780	2036	2164
3	1256	1288	1573	1764	1962
4	632	1058	1844	2149	2167
5	1022	1212	1406	1551	1847
6	1774	1655	1819	2052	2141
7CD	1829	1599	2179	1923	2106
8	1272	1291	1564	1715	2075
9	1273	1216	1296	1536	1800
10	995	1167	1298	1504	1776
11	1274	1316	1584	1751	1934
12	1274	1293	1534	1683	2028
13	1273	1281	1408	1649	2017
14	1274	1295	1456	1582	1975
15	1255	1289	1407	1520	1606
16	891	1016	1141	1316	1520
17(PA)	1112	1227	1215	1314	1660

* These estimates are for comparison of alternatives only. They are not refined projections of energy use.

16. COMMUNITY EFFECTS

a. Local Economy Impacts*

1.) Employment and Income

The effects on employment and income opportunities in the Flathead National Forest's zone of influence (Flathead, Lake, and Missoula Counties) are shown in Figures II-13 and 14. Employment and income impacts are shown as changes from the existing situation in 1980.

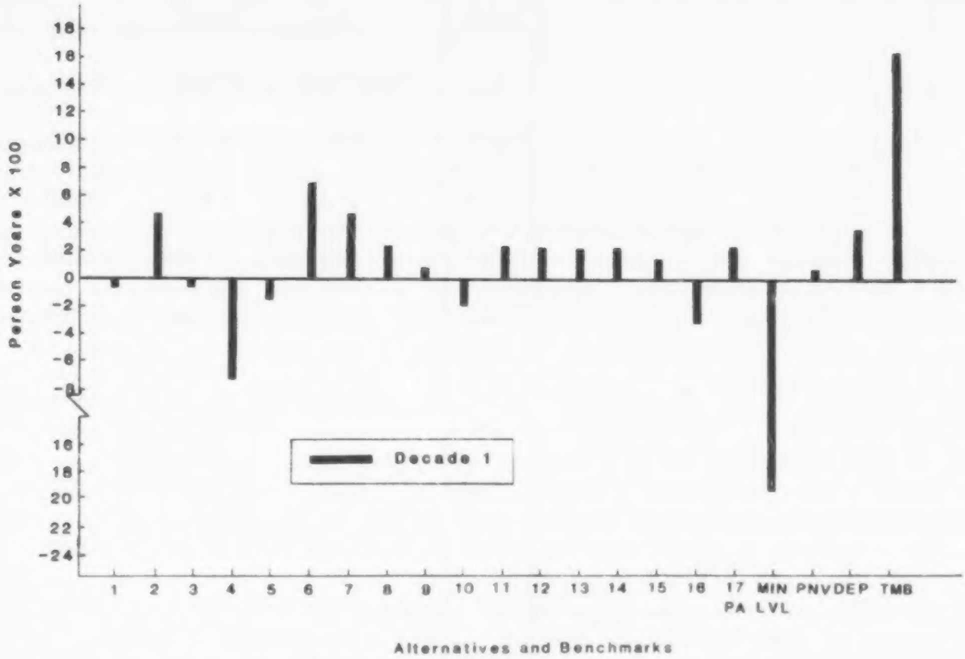

Figure II-13. Potential Effects of Management on Employment - Change from 1980 Situation

Flathead National Forest

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* Appendix B describes in further detail the economic impact analysis.

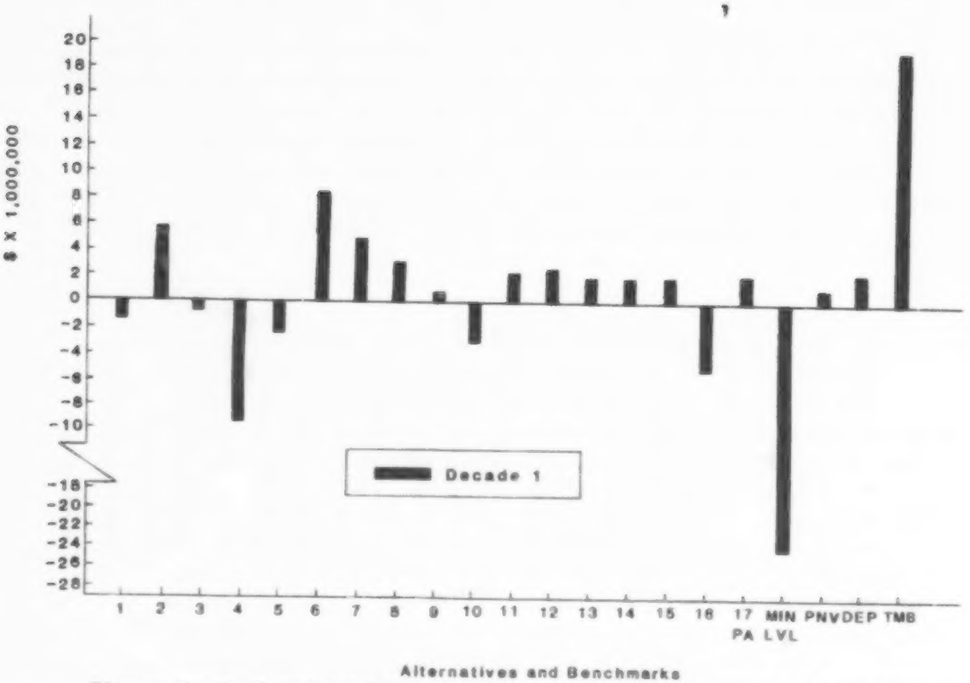

Figure II-14. Potential Effect of Management On Income-Change from 1980 Situation

Flathead National Forest

In Table II-18, employment and income changes are displayed as changes in person years and millions of dollars of income from the estimated 1980 situation.

These effects on employment and income relate to the actual levels of recreation use that would be associated with each alternative, not the capacity for use provided by the alternatives. Oil and gas exploration and development cannot be predicted and are assumed to cause the same changes in employment and income under all the alternatives. Most of the changes in income and employment among the alternatives is due to changes in the timber production associated with each alternative.

2.) Returns to State

By Federal law, 25 percent of the revenue the Forest collects from timber sales, grazing fees, recreation-use fees, special land use fees, and mineral leasing is returned to the State for use by the counties for schools and roads. The counties' shares of the payment are determined by the acreage of National Forest within the county. Figure II-15 displays estimates of returns to the counties through the State.

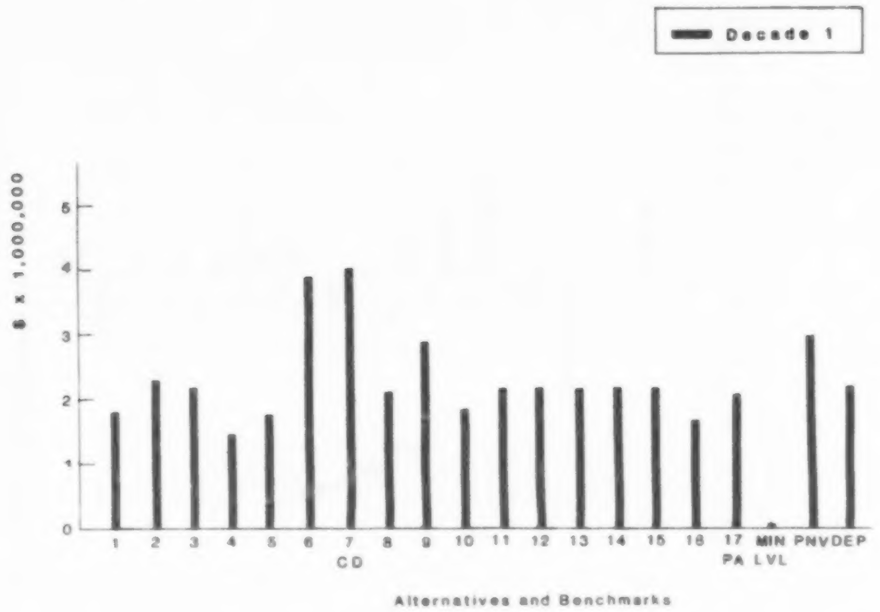

Figure II-15. Estimated Average Annual Returns To The State
Flathead National Forest

3.) Social Effects

While the level of employment and income are important in the quality of life, it does not give the entire picture of the economic and social well being of local communities. In the small cities and rural areas of the west, an important part of peoples' total income comes not only from jobs and wages but from nonmarket goods and services that flow from the natural and social environment (Thomas M. Power, Western Wildlands, Winter, 1983). Four social variables--1) lifestyles; 2) attitudes, beliefs, and values; 3) social organization; and 4) land-use patterns--are used to compare the effects generated by Forest outputs and activities (see Appendix B, Section V). Descriptions are provided below of the interests and related ways of life of different groups of the dependent community and regional and national interests and how they may be influenced by the various alternatives. Comparisons are made to the current situation represented by Alternative 7 (Current Direction).

(a) Lifestyles

Several groups of people are discussed here and in Chapter III as those most likely to be affected by different Forest management programs. Natives and long-term residents of northwest Montana are accustomed to using the Forest for both commodity production and recreation opportunities. Many depend directly or indirectly on a healthy timber industry. Flathead and Lincoln are the two most timber dependent counties within the Forest's zone of influence. Alternatives which would reduce average annual timber sell even in the short run could be a concern to people in these communities (Alternatives 1, 4, 5, 10, and 16). Counties such as Missoula and Lake also rely heavily on the timber industry but have other resource revenue producing industries (i.e., recreation, agricultural) that contribute to their economies. Alternatives which feature high timber harvests and reduce big-game populations and fishing habitat, however, would also concern people and affect their accustomed lifestyles (such as Alternatives 2, 4, and 6).

Local people are accustomed to accessing the Forest for many of their needs; firewood, game, fish, berry picking, and recreation. All alternatives include a policy of restrictive road use in order to protect fisheries and elk habitat. Some people may be concerned about this restriction on traditional Forest access. Residents who would like to see little or no change from the current management direction will probably prefer Alternatives 3, 7, 11, 12, 13, 14, 15, or 17. In these alternatives the supply of firewood, game, fish, and recreation opportunities would be sufficient to most of the future demands.

Native Americans are often interested in the amenity resources provided by the Forest. They would most often prefer alternatives that protect the natural environment and ensure the greatest protection to sites of religious and cultural significance. All alternatives assume a level of cultural resource protection that would meet their requirements. Alternatives 1, 5, 9, 10, or 16, however, which harvest the least timber and construct the fewest roads, would disturb these areas the least. No significant variation in the effects on women and other minority groups was identified.

Many younger newcomers, settling in Flathead, Lake, and Missoula Counties, tend to be less dependent on the forest products industry than long-term residents. Many moved to northwest Montana for the natural environment; they will likely prefer alternatives that emphasize nonmarket values such as wildlife, recreation, visual resources, and wilderness (Alternatives 1, 5, 9, 10, or 16). The lifestyle of residents not dependent on timber related employment but who frequently use the outdoors could be adversely affected by Alternatives such as 2, 4, 6, or 7.

Alternatives that provide a resource mix--moderate to high levels of all resource concerns--would benefit most groups of people with little negative impact on any one specific group. Alternatives in this category include 3, 8, 11-14, and 17 (Preferred Alternative).

B. OUTPUT SUMMARY OF THE ALTERNATIVES

Table II-18 provides a comparative summary of the resource production levels for the original and additional alternatives. Where changes are projected by decade, the estimated average annual outputs for Decades 1 through 5, 10, and 15 are displayed. Projected average annual outputs for all 15 decades are shown in the summaries of alternatives in Appendix D.

Table II-19 displays management emphasis and the Decade 1 intensity acreage for each alternative.

TABLE II-18 Estimated Resource Outputs for Decade 1 and Projections for Subsequent Decades by Alternatives, Departures, and Benchmarks - Flathead National Forest

Output/Activity	Alternative 1	2	3	4	5	6	7CD 1/	8	9	10	11	12
RECREATION	....Thousand Recreation Visitor Days Per Year....											
Developed Potential	1031	1024	1031	965	1031	1024	1024	1031	1024	1031	1031	1031
Dispersed Potential	1453	1576	1595	1259	1509	1600	1571	1673	1016	1208	1623	1584
Roadless	336	370	384	110	277	368	282	369	72	117	322	288
Roaded	1118	1205	1211	1149	1233	1233	1289	1304	944	1091	1301	1296
Wilderness	320	271	320	139	320	320	152	320	468	379	333	345
ROADLESS MANAGEMENT EMPHASES	....Thousand Acres (nonwilderness)....											
	320.5	393.5	428.6	139.3	449.7	351.7	386.1	384.5	97.1	275.4	338.1	320.3
VISUAL QUALITY OBJECTIVES ACHIEVED - Retention & Partial Retention	318.9	195.2	464.0	195.2	321.3	69.4	328.9	391.9	128.6	334.9	457.9	439.9
WILDERNESS ACRES	....Thousand Acres....											
	1070.0	1070.0	1070.0	1070.0	1070.0	1070.0	1070.0	1070.0	1565.3	1266.7	1118.8	1152.4
ELK POTENTIAL 2/	....Elk Over-wintering Population....											
Decade 1 ------------------>	5625	5417	4990	4892	5158	4510	5928	4760	4060	5092	4762	4749
2	5571	5649	5284	5102	5270	4326	6075	4749	3901	5187	4757	4741
3	6409	7310	6976	6232	6409	4587	6711	5097	3985	6210	5911	5914
4	6272	7998	7628	6405	6860	6299	6837	6467	4303	6555	6729	6556
5	6524	8694	8380	6902	7697	5960	6698	7800	4676	7243	7800	7800
10	5027	10790	10376	9214	11732	8874	8474	10781	5284	10997	10574	10763
15	7314	9808	10636	8522	11737	8991	8550	10967	5472	11698	10216	10978
OLD-GROWTH (Diversity)	....Thousand Acres....											
Potential Below 5,000' Elev.	81.1	51.9	61.1	71.2	102.5	62.8	48.7	63.9	79.4	103.4	64.0	64.0
WHITETAILED DEER POTENTIAL	....Deer Over-wintering Population....											
Decade 1 ------------------>	1084	1020	993	864	944	750	1175	825	616	925	826	822
2	1068	1091	981	928	977	696	1217	821	568	953	824	819
3	1319	1587	1487	1264	1317	773	1408	1165	593	1259	1169	1170
4	1277	1792	1681	1316	1452	987	1445	1693	688	1362	1414	1362
5	1352	2001	1907	1465	1703	1184	1404	1733	800	1568	1734	1734
10	1503	2627	2504	2156	2908	2055	1935	2625	982	2690	2563	2620
15	1588	2333	2581	1949	2911	2089	1957	2680	1038	2899	2456	2684
GRIZZLY BEAR POTENTIAL 4/	....Bear Population....											
	215	190	197	152	195	191	190	200	212	195	201	201
FISH POTENTIAL 3/	....Thousand Catchable Trout Per Year....											
Decade 1 ------------------>	577	448	544	563	567	430	432	542	530	567	544	542
5	653	218	508	393	614	169	200	388	600	676	519	518

1/ CD = Current Direction
2/ Total for Forest - nonwilderness + 2000 wilderness animals.
3/ Streams outside wilderness.
4/ Number indicates the habitat's potential to support a recovered population under that alternative.
The Grizzly Bear Recovery Plan (Jan. 29, 1982) projects 207 bears as a recovered population level for the Flathead National Forest. As the results of research becomes available, this projected number may change.

TABLE II-18 (continued)

Output/Activity	Alternative 13	14	15	16	17PA 1/	Departure	MINLVL	PNV	Benchmark TIMBER	RANGE	WILDLIFE
RECREATION	...Thousand Recreation Visitor Days Per Year...										
Developed Potential	1031	1031	1031	1031	1031	840	0	1024	-	-	-
Dispersed Potential	1528	1465	1388	1122	1599	1599	789	1393	1167	1005	1049
Roadless	242	240	199	112	264	263	90	362	15	12	26
Roaded	1286	1225	1189	1010	1335	1335	698	1031	1153	994	1023
Wilderness	363	379	398	432	349	349	319	319	319	319	319
ROADLESS MANAGEMENT EMPHASES	...Thousand Acres (nonwilderness)...										
	281.1	279.0	243.0	163.6	296.0	296.2	8.9	298.9	5.7	.3	3.5
VISUAL QUALITY OBJECTIVES ACHIEVED - Retention & Partial Retention	385.4	383.4	347.3	275.0	409.7	409.7	0	355.8	-	-	-
WILDERNESS ACRES	...Thousand Acres...										
	1213.2	1266.6	1330.2	1443.8	1168.0	1168.0	1070.0	1070.0	1070.0	1070.0	1070.0
ELK POTENTIAL 2/	...Elk Over-wintering Population...										
Decade 1 ----------------->	4646	4646	4588	4774	5503	5502	4917	4486	5005	4867	5647
2	4585	4586	4518	4663	5706	5633	4645	4298	5375	5280	6380
3	5764	5773	5475	5047	6716	6691	4262	4554	6630	6593	8540
4	6544	6510	6183	4883	7350	7265	4169	4814	6437	6387	9227
5	7800	7800	7220	4900	7800	7800	4041	5492	6600	6307	9807
10	10230	10254	9990	6339	11588	11377	4041	9002	6450	6080	10460
15	10615	10587	10100	5854	11118	10986	4041	8249	6924	6547	11207
OLD-GROWTH (Diversity)	...Thousand Acres...										
Potential Below 5,000' Elev.	64.8	65.8	65.8	84.6	124.6	124.6	62.0	79.4	26.6	-	-
WHITETAILED DEER POTENTIAL	...Deer Over-wintering Population...										
Decade 1 ----------------->	791	791	774	829	1047	1047	872	743	899	835	1093
2	773	773	753	796	1108	1086	791	687	1008	973	1307
3	1125	1128	1039	911	1410	1402	676	764	1384	1373	1960
4	1359	1348	1251	862	1610	1574	648	841	1327	1307	2160
5	1734	1734	1561	867	1734	1734	611	1044	1256	1293	2360
10	2460	2468	2389	1297	2866	2803	611	2093	1324	1213	2533
15	2576	2567	2422	1152	2726	2686	611	1868	1472	1360	2747
GRIZZLY BEAR POTENTIAL 4/	...Bear Population...										
	202	202	202	216	205	205	212	184	143	140	140
FISH POTENTIAL 3/	...Thousand Catchable Trout Per Year...										
Decade 1 ----------------->	541	541	545	579	548	534	534	532	396	-	-
5	523	531	541	846	565	560	817	453	BMVPL 5/	-	-

1/ PA = Proposed Action
2/ Total for Forest - nonwilderness + 2000 wilderness animals.
3/ Streams outside wilderness.
4/ Number indicates the habitat's potential to support a recovered population under that alternative.
The Grizzly Bear Recovery Plan (Jan. 29, 1982) projects 207 bears as a recovered population level for the Flathead National Forest. As the results of research becomes available, this projected number may change.
5/ Below minimum viable population level.

TABLE II-18 (continued)

Output/Activity	Alternative											
	1	2	3	4	5	6	7 CD	8	9	10	11	12
LIVESTOCK GRAZING USE POTENTIAL (Total)	..........Animal Unit Months Per Year..........											
Decade 1 ----------------->	4817	6418	6173	5747	5920	7183	6353	6223	6703	5920	6223	6223
2	4817	5708	5923	5747	5040	6133	6433	5933	6703	5040	5933	5933
3	4817	6418	6173	5747	5920	7313	6433	6223	6703	5920	6223	6223
4	4817	6418	6173	5747	5920	7803	6433	6223	6703	5920	6223	6223
5	4817	6418	6173	5747	5920	10663	6433	6223	6703	5920	6223	6223
10	4817	6418	6173	5747	5920	7583	6243	6223	6703	5920	6223	6223
15	4817	6418	6173	5747	5920	10183	6353	6223	6703	5920	6223	6223
NONWILDERNESS LIVESTOCK USE POTENTIAL												
Decade 1 ----------------->	2880	4120	3590	3870	3660	4600	3770	3640	4120	3660	3640	3640
2	2880	3410	3340	2770	2780	3550	3850	3350	4120	2700	3350	3350
3 (Permitted Use)	2880	4120	3590	3660	3700	4730	3850	3640	4120	3700	3640	3640
4	2880	4120	3590	3870	3700	5220	3850	3640	4120	3700	3640	3640
5	2880	4120	3590	3870	3700	8080	3850	3640	4120	3700	3640	3640
10	2880	4120	3590	3870	3700	5000	3850	3640	4120	3700	3640	3640
15	2880	4120	3590	3870	3700	7600	3770	3640	4120	3700	3640	3640
WILDERNESS LIVESTOCK USE POTENTIAL												
Decade 1 ----------------->	1937	2298	2583	1877	2260	2583	2583	2583	2583	2583	2583	2583
2	1937	2298	2583	1877	2260	2583	2583	2583	2583	2260	2583	2583
3 (Transportation	1937	2298	2583	1877	2260	2583	2583	2583	2583	2260	2583	2583
4 stock)	1937	2298	2583	1877	2260	2583	2583	2583	2583	2260	2583	2583
5	1937	2298	2583	1877	2260	2583	2583	2583	2583	2260	2583	2583
10	1937	2298	2583	1877	2260	2583	2583	2583	2583	2260	2583	2583
15	1937	2298	2583	1877	2260	2583	2583	2583	2583	2260	2583	2583

TABLE II-18 (continued)

Output/Activity	Alternative 13	14	15	16	17 PA	Departure	Benchmark MINLVL	PNV	TIMBER	RANGE 1/	WILDLIFE
LIVESTOCK GRAZING USE POTENTIAL (Total)	..................................Animal Unit Months Per Year....................................										
Decade 1 ------------------>	6223	6223	6223	4817	6223	6223	6700	6703	5727	8827	-
2	5933	5933	5933	4817	5933	5933	0	6703	5727	11981	-
3	6223	6223	6223	4817	6223	6223	0	6703	5727	11732	-
4	6223	6223	6223	4817	6223	6223	0	6703	5727	14764	-
5	6223	6223	6223	4817	6223	6223	0	6703	5727	10799	-
10	6223	6223	6223	4817	6223	6223	0	6703	5727	7267	-
15	6223	6223	6223	4817	6223	6223	0	6703	5727	9615	-
NONWILDERNESS LIVESTOCK USE POTENTIAL											
Decade 1 ------------------>	3640	3640	3640	2880	3640	3640	3850	4120	3850	4957	4721
2	3350	3350	3350	2880	3350	3350	0	4120	3850	8111	4014
3 (Permitted Use)	3640	3640	3640	2880	3640	3640	0	4120	3850	11732	6713
4	3640	3640	3640	2880	3640	3640	0	4120	3850	10894	9167
5	3640	3640	3640	2880	3640	3640	0	4120	3850	6929	6970
10	3640	3640	3640	2880	3640	3640	0	4120	3850	3397	5567
15	3640	3640	3640	2880	3640	3640	0	4120	3850	5745	5736
WILDERNESS LIVESTOCK USE POTENTIAL											
Decade 1 ------------------>	2583	2583	2583	1937	2583	2583	2850	2583	1877	3870	-
2	2583	2583	2583	1937	2583	2583	0	2583	1877	3870	-
3 (Transportation	2583	2583	2583	1937	2583	2583	0	2583	1877	3870	-
4 stock)	2583	2583	2583	1937	2583	2583	0	2583	1877	3870	-
5	2583	2583	2583	1937	2583	2583	0	2583	1877	3870	-
10	2583	2583	2583	1937	2583	2583	0	2583	1877	3870	-
15	2583	2583	2583	1937	2583	2583	0	2583	1877	3870	-

1/ Maximum potential nonwilderness livestock AUM's occur in Decade 13--12,021 AUM's.

TABLE II-18 (continued)

Output/Activity	Alternative 1	2	3	4	5	6	7 CD	8	9	10	11	12
TIMBER - POTENTIAL BASE HARVEST						Million Board Feet Per Year						
Decade 1 ----------------->	82	116	101	51	82	145	132	100	103	80	100	100
2	98	119	105	86	99	134	122	103	97	95	105	103
3	115	145	129	151	115	149	167	127	106	112	128	124
4	130	161	141	175	129	170	143	137	125	125	140	134
5	151	177	160	176	151	175	161	166	146	144	157	165
10	142	168	156	173	142	164	154	164	131	143	156	163
15	132	157	148	154	132	161	151	152	117	143	149	150
						Million Cubic Feet Per Year						
Decade 1 ----------------->	20.3	28.8	25.1	12.2	20.5	34.7	30.8	25.0	25.2	19.7	25.0	25.0
2	23.4	28.8	25.1	20.1	23.5	33.7	30.8	25.0	25.2	22.6	25.0	25.0
3	26.9	34.6	30.1	36.4	27.1	34.8	38.5	29.5	25.2	26.1	30.0	28.8
4	30.9	41.5	36.1	42.2	31.1	41.8	38.5	35.4	30.3	30.1	36.0	34.6
5	35.6	42.1	38.5	42.2	35.8	41.9	38.5	40.6	36.4	34.4	38.3	40.3
10	35.6	42.1	38.5	42.2	35.8	41.9	38.5	40.6	32.6	36.6	38.3	40.3
15	35.6	42.1	38.5	42.2	35.8	41.9	38.5	40.6	29.3	36.6	38.3	40.3
						Thousand Acres 2/						
LAND SUITABLE FOR TIMBER MGMT.	673	775	715	737	651	780	722	720	578	612	717	715
						Million Board Feet						
LONG-TERM SUSTAINED YIELD	154	180	166	175	152	186	165	165	129	142	164	164
						Million Cubic Feet						
	38.4	45.1	41.4	43.7	38.1	46.4	41.2	41.2	32.3	35.5	41.0	40.9
POTENTIAL LODGEPOLE PINE HARVEST						Thousand Acres Per Year						
Decade 1	2.4	3.2	1.8	0.9	2.4	0.3	0.4	2.0	2.0	1.9	1.7	1.7
POTENTIAL INTERMEDIATE HARVEST												
Decade 1 ----------------->	1.4	2.0	2.2	0	1.5	0.3	0.1	2.7	2.4	1.6	2.6	2.7
2	1.4	2.4	1.1	0.1	1.6	4.3	4.2	1.7	5.2	1.1	1.2	1.7
3	0.8	2.3	0.6	3.4	1.1	0.7	T 3/	0.5	1.1	0.2	0.5	0.5
4	2.6	11.0	8.8	5.6	2.8	3.7	13.0	9.2	2.2	1.5	9.7	9.2
5	2.4	3.8	5.8	5.9	3.7	4.3	4.4	7.2	3.8	3.5	6.6	7.1
10	5.9	7.8	5.6	6.9	6.8	9.4	6.1	6.5	5.2	7.6	5.7	6.6
15	20.0	26.7	14.7	29.9	24.3	20.8	13.8	13.2	5.0	10.8	13.7	13.8
POTENTIAL REGENERATED HARVEST (sum of shelterwood, seed tree, and clear cutting)												
Decade 1 ----------------->	5.1	6.9	6.2	3.2	5.0	8.0	7.6	6.2	5.6	4.7	6.4	6.3
2	5.1	6.2	5.7	4.6	5.1	7.3	7.1	5.9	5.1	5.0	5.9	5.9
3	5.4	6.4	6.1	6.9	5.3	6.9	8.6	6.1	5.2	5.3	6.0	5.9
4	6.3	7.1	6.3	8.2	6.5	9.0	6.1	6.2	6.9	6.5	5.9	6.1
5	6.5	7.1	6.1	7.5	6.0	7.4	5.9	6.3	6.7	5.9	5.8	6.2
10	6.5	7.5	7.0	7.4	6.3	7.5	6.6	10.0	6.6	6.3	6.9	9.9
15	3.7	3.3	5.7	2.8	2.7	5.3	6.1	7.1	8.8	6.5	5.8	6.9

2/ 721.8 - FORPLAN run 835.7 - 1969 Timber Management Plan (adjusted).

3/ T = Trace

TABLE II-18 (continued)

Output/Activity	Alternative 13	14	15	16	17 PA	Departure	MINLVL	Benchmark PNV	TIMBER	RANGE	WILDLIFE
POTENTIAL TIMBER - BASE HARVEST	...Million Board Feet Per Year...										
Decade 1 ----------------->	100	100	99	71	100	104	0 1/	103	171	132	62
2	102	103	103	82	106	117	0	102	171	132	107
3	121	117	114	94	111	108	0	130	171	168	175
4	131	126	122	108	119	116	0	151	178	168	175
5	164	160	156	124	152	148	0	183	190	168	175
10	161	159	154	132	152	177	0	158	190	168	175
15	149	147	142	132	137	114	0	97	200	168	175
	...Million Cubic Feet Per Year...										
Decade 1 ----------------->	25.0	25.0	25.0	17.8	25.7	26.5	0	25.3	42.8	33.1	15.6
2	25.0	25.0	25.0	20.4	25.7	29.0	0	25.3	42.8	33.1	26.7
3	28.2	27.3	26.5	23.5	25.8	25.1	0	30.3	42.8	42.0	43.7
4	33.8	32.7	31.7	27.1	31.0	30.2	0	36.4	44.6	42.0	43.7
5	40.0	39.2	38.1	31.1	37.2	36.2	0	43.6	47.5	42.0	43.7
10	40.0	39.2	38.1	32.9	37.2	43.0	0	40.0	47.5	42.0	43.7
15	40.0	39.2	38.1	32.9	37.2	29.0	0	25.8	50.0	42.0	43.7
	...Thousand Acres...										
LAND SUITABLE FOR TIMBER MGMT.	707	687	671	512	671	671	0	723	836	-	-
	...Million Board Feet...										
LONG-TERM SUSTAINED YIELD	162	159	154	135	149	138	0	155	201	184	188
	...Million Cubic Feet...										
	40.6	39.8	38.5	33.7	41.0	34.5	0	38.8	50.3	45.9	46.9
POTENTIAL LODGEPOLE PINE HARVEST	...Thousand Acres Per Year...										
Decade 1	1.8	1.8	2.0	1.5	2.9		0	2.2	3.9	-	-
POTENTIAL INTERMEDIATE HARVEST											
Decade 1 ----------------->	2.7	2.7	2.9	1.0	2.5	2.6	0	2.3	6.8	4.0	0.4
2	1.7	1.7	1.7	1.3	2.1	3.3	0	3.3	6.4	T 3/	0.6
3	0.5	0.4	0.3	0.4	0.3	0.3	0	0.3	3.6	0	0.5
4	9.1	9.0	9.0	3.1	9.3	8.5	0	2.2	6.8	6.9	3.0
5	7.1	7.0	6.7	3.0	6.8	6.2	0	4.4	11.9	3.6	4.5
10	6.3	5.9	5.3	5.6	4.6	4.1	0	7.4	9.2	8.1	7.2
15	12.7	12.6	12.6	7.5	12.9	6.1	0	10.7	28.2	14.2	32.1
POTENTIAL REGENERATED HARVEST (sum of shelterwood, seed tree, and clear cutting)											
Decade 1 ----------------->	6.2	6.2	6.2	4.4	6.6	6.8	0	5.6	17.8	10.0	4.0
2	5.9	5.9	5.9	4.5	5.7	5.9	0	5.3	11.3	9.0	7.0
3	5.8	5.6	5.5	4.7	5.6	5.1	0	6.4	9.6	10.5	9.6
4	6.0	5.8	5.6	5.5	5.3	4.8	0	8.2	7.9	7.2	8.6
5	6.2	6.1	6.0	5.3	5.6	5.1	0	7.3	6.0	8.3	6.8
10	10.0	9.9	9.7	6.0	6.9	9.8	0	7.5	8.1	7.9	7.9
15	2.1	6.9	6.7	8.7	6.3	5.1	0	4.2	3.1	6.5	1.8

1/ No harvest scheduled - outputs from close out of existing contracts only

2/ 721.8 - FORPLAN run 835.7 - 1969 Timber Management Plan (adjusted)

3/ T = Trace

TABLE II-18 (continued)

Output/Activity	1	2	3	4	5	6	7 CD	8	9	10	11	12
POTENTIAL SELECTION CUTTING												
(Uneven-aged) 1/	Thousand Acres Per Year											
Decade 1 ----------------->	0	2.3	0.9	0	0	0	0.8	0.9	0	0	0.9	0.9
2	0	2.3	0.9	0	0	0	0.8	0.9	0	0	0.9	0.9
3	0	2.3	0.9	0	0	0	0.8	0.9	0	0	0.9	0.9
4	0	2.3	0.9	0	0	0	0.8	0.9	0	0	0.9	0.9
5	0	2.3	0.9	0	0	0	1.6	0.9	0	0	0.9	0.9
10	0	2.3	0.9	0	0	0	1.7	0.9	0	0	0.9	0.9
15	0	2.3	0.9	0	0	0	0.8	0.9	0	0	0.9	0.9
POTENTIAL ROADS:	Miles											
Existing 2/	3146	3146	3146	3146	3146	3146	3146	3146	3146	3146	3146	3146
To be constructed	2942	3170	2960	3142	2920	3602	3455	2880	2258	2752	2875	2856
Total	6088	6316	6106	6288	6066	6748	6601	6026	5404	5898	6021	6002
To be constructed	Miles Per Year											
Decade 1 ----------------->	46.7	65.6	65.6	25.6	58.0	62.6	67.2	70.3	28.0	55.0	74.9	74.3
2	42.6	57.7	46.2	33.3	49.1	94.7	62.5	47.3	42.3	45.0	47.1	46.8
3	50.5	71.8	52.8	75.8	57.4	69.7	84.8	52.7	39.4	55.0	54.0	53.7
4	69.1	86.2	64.2	99.9	86.6	104.1	89.6	63.8	59.5	88.6	64.4	64.0
5	81.9	35.7	39.8	58.5	40.9	29.1	21.1	46.8	56.6	31.6	47.1	46.8
10	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
Total	Miles											
(Decades 1-5)	2908	3170	2912	2931	2920	3602	3252	2809	2258	2752	2875	2856
OIL AND GAS LEASING 3/	Thousand Acres											
Category A 4/	1077.9	1073.6	1077.9	1074.7	1077.9	1074.1	1074.1	1077.9	1614.4	1271.5	1126.8	1160.4
Category B 5/	363.4	41.3	79.0	41.3	41.3	41.3	76.6	135.5	135.5	41.3	135.5	122.3
Category C 6/	889.0	1215.4	1173.4	1214.3	1211.1	1214.9	1179.6	1116.9	580.4	1017.5	1068.0	1047.7
Category D 7/	0	0	0	0	0	0	0	0	0	0	0	0

1/ These acreages pertain only to scheduled timber harvest areas. Uneven-aged harvest systems may be used on unsuitable areas where needed to meet the multiple-use objectives (i.e. approximately 30 to 40 thousand acres of riparian wildlife).

2/ 1980 Figures were run for the FORPLAN run. Current existing miles of road are 3,941

3/ All of the Flathead National Forest is considered high potential for energy resources. Locatable (hardrock) mineral is low over most of the Forest with only local areas of moderate potential.

4/ Currently withdrawn.

5/ Leasable with special stipulations - Executive Order, law or regulation.

6/ Leasable with special stipulations - Regional Forester recommendation.

7/ Leasable with standard stipulations - Regional Forester recommendation.

TABLE II-18 (continued)

	Alternative						Benchmark				
Output/Activity	13	14	15	16	17 PA	Departure	MINLVL	PNV	TIMBER	RANGE	WILDLIFE
POTENTIAL SELECTION CUTTING											
(Uneven-aged) 1/						Thousand Acres Per Year					
Decade 1 ----------------->	0.9	0.9	0.8	0	1.1	1.1	0	0	2.0	0	0
2	0.9	0.9	0.8	0	1.1	1.1	0	0	2.0	0	0
3	0.9	0.9	0.8	0	1.1	1.1	0	0	2.0	0	0
4	0.9	0.9	0.8	0	1.1	1.1	0	0	2.0	0	0
5	0.9	0.9	0.8	0	1.1	1.1	0	0	2.0	0	0
10	0.9	0.9	0.8	0	1.1	1.1	0	0	2.0	0	0
15	0.9	0.9	0.8	0	1.1	1.1	0	0	2.0	0	0
POTENTIAL ROADS:						Miles					
Existing 2/	3146	3146	3146	3146	3146	3146	3146	3146	3146	3146	3146
To be constructed	2840	2783	2717	2526	2771	2771	0	3379	3611	-	-
Total	5986	5929	5863	5672	5917	5917	3146	6525	6757	-	-
To be constructed						Miles Per Year					
Decade 1 ----------------->	73.9	72.6	70.9	66.2	74.9	69.3	0	52.3	117.8	-	-
2	46.5	45.5	44.4	41.1	44.5	47.1	0	61.7	61.3	-	-
3	53.4	52.3	51.0	47.4	51.4	52.6	0	57.8	66.4	-	-
4	63.7	62.4	61.0	56.8	61.8	61.0	0	85.0	52.7	-	-
5	46.5	45.5	44.4	41.1	44.5	47.1	0	81.1	52.7	-	-
10	0	0	0	0	0	0	0	0	0	-	-
15	0	0	0	0	0	0	0	0	0	-	-
Total						Miles					
(Decades 1-5)	2840	2783	2717	2526	2771	2771	0	3379	3509	-	-
OIL AND GAS LEASING 3/						Thousand Acres					
Category A 4/	1218.0	1271.4	1334.9	1448.5	1172.8	-	-	-	-	-	-
Category B 5/	122.2	73.0	61.9	182.3	150.1	-	-	-	-	-	-
Category C 6/	990.1	985.9	933.5	699.5	1007.5	-	-	-	-	-	-
Category D 7/	0	0	0	0		-	-	-	-	-	-

1/ These acreages pertain only to scheduled timber harvest areas. Uneven-aged harvest systems may be used on unsuitable acres where needed to meet the multiple-use objectives (i.e. approximately 30 to 40 thousand acres of riparian wildlife).
2/ 1980 figures were run from the FORPLAN run. Current existing miles of road are 3,941.
3/ All of the Flathead National Forest is considered high potential for energy resources. Locatable (hardrock) mineral is low over most of the Forest with only local areas of moderate potential.
4/ Currently withdrawn.
5/ Leasable with special stipulations - Executive Order, law or regulation.
6/ Leasable with special stipulations - Regional Forester recommendation.
7/ Leasable with standard stipulations - Regional Forester recommendation.

TABLE II-18 (continued)

Output/Activity					Alternative							
	1	2	3	4	5	6	7 CD	8	9	10	11	12
ESTIMATED BUDGET TO IMPLEMENT 1/					Million Dollars Per Year							
Decade 1 ----------------->	12.4	14.5	13.5	9.4	11.8	12.6	12.4	14.0	10.1	11.1	14.0	13.8
2	11.6	14.2	12.8	10.8	12.2	13.8	15.1	13.1	12.9	11.4	12.9	12.9
3	13.6	16.2	14.4	14.0	13.4	15.0	14.7	14.8	11.9	12.7	14.3	14.5
4	14.1	17.3	15.3	14.8	14.2	16.2	17.9	15.6	11.9	13.5	15.5	15.3
5	14.7	16.4	15.4	15.4	13.9	16.3	14.7	15.5	13.2	12.9	15.2	15.3
10	15.4	17.6	15.8	15.8	14.9	16.0	18.5	18.5	12.6	14.5	15.9	18.2
15	15.4	17.0	16.1	15.5	15.1	17.0	15.2	18.2	14.4	16.3	15.6	17.9
ESTIMATED OPERATIONS & MAINTENANCE NEEDS												
Decade 1 ----------------->	3.6	3.4	3.6	2.9	3.5	2.9	3.5	3.7	2.3	3.1	3.6	3.5
2	3.9	3.7	3.9	3.1	3.8	3.3	3.8	4.0	4.5	3.3	3.9	3.8
3	4.2	4.0	4.1	3.3	4.0	3.7	4.1	4.2	2.7	3.6	4.2	4.1
4	4.5	4.4	4.4	3.7	4.4	4.1	4.4	4.5	3.0	3.9	4.5	4.4
5	4.8	4.8	4.7	4.1	4.7	4.9	4.6	4.8	3.6	4.2	4.8	4.7
10	5.0	4.9	4.9	4.4	4.9	5.1	4.6	5.0	3.8	4.4	4.9	4.8
15	5.0	4.9	4.9	4.4	4.9	5.2	4.7	4.9	3.9	4.4	4.9	4.8
ESTIMATED FIXED COSTS												
Decade 1 ----------------->	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
2	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
4	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
10	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
15	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
ESTIMATED PLANNING & INVENTORY												
Decade 1 ----------------->	0.8	0.8	0.8	0.7	0.8	0.7	0.8	0.9	0.5	0.7	0.8	0.8
2	0.8	0.8	0.8	0.7	0.8	0.7	0.8	0.9	0.5	0.7	0.8	0.8
3	0.8	0.8	0.8	0.7	0.8	0.7	0.8	0.9	0.6	0.7	0.9	0.8
4	0.8	0.8	0.8	0.7	0.8	0.7	0.8	0.9	0.6	0.7	0.9	0.8
5	0.8	0.8	0.9	0.7	0.8	0.8	0.8	0.9	0.6	0.7	0.9	0.8
10	0.9	0.8	0.9	0.7	0.8	0.8	0.7	0.9	0.7	0.8	0.9	0.8
15	0.9	0.8	0.9	0.7	0.8	0.9	0.7	0.9	0.7	0.8	0.9	0.8
ESTIMATED FOREST INVESTMENT (except roads) 2/												
Decade 1 ----------------->	5.2	7.5	6.3	3.1	4.8	6.2	5.3	6.7	4.5	4.6	6.8	6.7
2	3.9	6.6	5.1	4.0	4.6	6.8	7.5	5.2	4.9	4.3	5.1	5.2
3	5.6	8.4	6.4	7.0	5.6	7.6	6.8	6.7	5.7	5.4	6.3	6.6
4	5.7	9.0	7.0	7.4	6.0	8.4	9.7	7.2	5.5	5.8	7.2	7.1
5	6.0	7.8	6.8	7.6	5.4	7.5	6.3	6.8	5.9	4.9	6.6	6.7
10	6.5	8.9	7.0	7.6	6.2	7.1	10.2	9.7	5.1	6.4	7.1	9.6
15	6.6	8.3	7.4	7.3	6.4	7.9	6.8	9.4	6.9	8.1	6.9	9.3

1/ 1978 Dollars

2/ Includes sale prep., reforestation, timber stand improvement, engineering, support, recreation, range, soil, water, fisheries, and wildlife improvement.

TABLE II-18 (continued)

Output/Activity	Alternative 13	14	15	16	17 PA	Departure	Benchmark MINLVL	PNV	TIMBER	RANGE	WILDLIFE
ESTIMATED BUDGET TO IMPLEMENT 1/	..................................Million Dollars Per Year....................................										
Decade 1 ----------------->	13.7	13.5	13.2	10.8	13.7	13.7	3.2	11.1	21.6	-	-
2	12.8	12.5	12.3	10.7	12.3	12.9	2.8	11.9	18.8	-	-
3	14.3	14.0	13.5	11.9	13.8	13.7	2.8	14.9	21.2	-	-
4	15.0	14.7	14.2	12.3	15.1	15.0	2.8	13.7	21.4	-	-
5	15.1	14.8	14.5	12.5	14.9	15.2	2.8	15.6	16.9	-	-
10	18.2	17.8	17.2	13.9	17.9	18.2	2.8	15.8	20.7	-	-
15	18.2	17.4	16.8	16.9	17.2	15.3	2.8	13.5	18.2	-	-
ESTIMATED OPERATIONS & MAINTENANCE											
Decade 1 ----------------->	3.4	3.3	3.2	2.9	3.6	3.6	1.7	2.8	2.9	-	-
2	3.7	3.6	3.5	3.2	3.9	3.9	1.3	3.1	3.3	-	-
3	4.0	3.9	3.7	3.4	4.2	4.1	1.3	3.4	3.7	-	-
4	4.3	4.2	4.0	3.7	4.4	4.4	1.3	3.7	4.0	-	-
5	4.6	4.5	4.3	4.0	4.7	4.7	1.3	4.6	4.3	-	-
10	4.7	4.6	4.5	4.2	4.9	4.8	1.3	4.8	4.5	-	-
15	4.7	4.6	4.5	4.2	4.8	4.8	1.3	4.9	4.5	-	-
ESTIMATED FIXED COSTS											
Decade 1 ----------------->	2.7	2.7	2.7	2.7	2.7	2.7	0	1.5	2.9	-	-
2	3.0	3.0	3.0	3.0	3.0	3.0	0	1.4	3.0	-	-
3	3.0	3.0	3.0	3.0	3.0	3.0	0	1.4	3.0	-	-
4	3.0	3.0	3.0	3.0	3.0	3.0	0	1.4	3.0	-	-
5	3.0	3.0	3.0	3.0	3.0	3.0	0	1.4	3.0	-	-
10	3.0	3.0	3.0	3.0	3.0	3.0	0	1.4	3.0	-	-
15	3.0	3.0	3.0	3.0	3.0	3.0	0	1.4	3.0	-	-
ESTIMATED PLANNING & INVENTORY											
Decade 1 ----------------->	0.8	0.8	0.7	0.7	0.8	0.8	0	0.7	0.6	-	-
2	0.8	0.8	0.8	0.7	0.8	0.8	0	0.7	0.6	-	-
3	0.8	0.8	0.8	0.7	0.8	0.8	0	0.7	0.7	-	-
4	0.8	0.8	0.8	0.7	0.8	0.8	0	0.7	0.7	-	-
5	0.8	0.8	0.8	0.7	0.8	0.8	0	0.8	0.7	-	-
10	0.8	0.8	0.8	0.7	0.9	0.8	0	0.8	0.7	-	-
15	0.8	0.8	0.8	0.7	0.8	0.8	0	0.8	0.7	-	-
ESTIMATED FOREST INVESTMENT (except roads)2/											
Decade 1 ----------------->	6.7	6.7	6.5	4.4	6.5	6.6	0	4.9	15.4	-	-
2	5.2	5.1	5.0	3.8	4.6	5.1	0	5.1	11.8	-	-
3	6.5	6.3	6.1	4.8	5.8	5.7	0	6.8	13.9	-	-
4	6.9	6.8	6.5	4.9	6.9	6.7	0	6.3	13.7	-	-
5	6.7	6.6	6.3	4.7	6.3	6.7	0	7.2	8.9	-	-
10	9.6	9.4	9.0	6.0	9.1	9.6	0	7.2	12.5	-	-
15	9.2	9.1	8.6	9.0	8.5	6.7	0	4.8	10.0	-	-

1/ 1978 Dollars

2/ Includes sale prep., reforestation, timber stand improvement, engineering support, recreation, range, soil, water, fisheries, and wildlife improvement.

TABLE II-18 (continued)

	Alternative											
Output/Activity	1	2	3	4	5	6	7 CD	8	9	10	11	12
ESTIMATED CAPITAL INVESTMENT (Road constr. & reconstr.)	....................................Million Dollars Per Year..											
Decade 1 ----------------->	2.0	2.7	2.6	1.3	2.3	2.6	2.9	2.8	0.9	1.8	2.5	2.5
2	1.9	2.4	2.0	1.5	2.0	3.7	2.7	2.0	1.4	1.5	1.6	1.6
3	2.1	2.9	2.2	3.0	2.3	2.8	3.5	2.2	1.3	1.8	1.8	1.8
4	2.8	3.4	2.6	3.8	3.3	4.0	3.7	2.6	2.0	2.9	2.2	2.2
5	3.2	1.6	1.7	2.4	1.7	1.4	1.2	2.0	1.9	1.0	1.6	1.6
10	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
ESTIMATED APPROPRIATED DOLLARS												
Decade 1 ----------------->	0.8	1.0	1.2	0.5	1.1	0.5	1.0	1.4	0	1.0	1.5	1.5
2	0.4	0.7	0.4	0.3	0.6	1.8	1.0	0.5	0.3	0.5	0.4	0.5
3	0.5	0.8	0.3	0.8	0.6	0.7	1.1	0.4	0.2	0.7	0.4	0.5
4	0.9	1.0	0.5	1.3	1.4	1.6	1.7	0.6	0.6	1.7	0.6	0.6
5	1.0	0	0	0	0	0	0	0	0.3	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
ESTIMATED PURCHASER CREDITS												
Decade 1 ----------------->	1.2	1.7	1.4	0.8	1.2	2.1	1.9	1.4	0.9	0.7	1.1	1.1
2	1.5	1.7	1.6	1.2	1.4	1.9	1.7	1.5	1.1	0.9	1.2	1.1
3	1.6	2.1	1.9	2.2	1.7	2.1	2.4	1.8	1.2	1.1	1.5	1.3
4	1.9	2.4	2.1	2.5	1.9	2.4	2.0	2.0	1.4	1.1	1.6	1.6
5	2.2	1.6	1.7	2.4	1.7	1.3	1.2	2.0	1.6	1.0	1.6	1.6
10	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
ESTIMATED TOTAL COSTS 1/												
Decade 1 ----------------->	14.1	17.2	16.1	10.7	14.1	15.2	15.3	16.8	11.0	12.9	16.5	16.4
2	13.5	16.6	14.8	12.3	14.2	17.5	17.8	15.1	14.4	12.3	14.5	14.5
3	15.7	19.1	16.6	17.0	15.7	17.8	18.2	17.0	13.3	14.5	16.2	16.3
4	16.9	20.7	17.9	18.6	17.5	20.2	21.6	18.2	14.0	16.3	17.7	17.5
5	17.9	18.0	17.1	17.8	15.6	17.7	15.9	17.5	15.1	13.9	16.8	16.8
10	15.4	17.6	15.8	15.8	14.9	16.0	18.5	18.5	12.5	14.5	15.9	18.2
15	15.4	17.0	16.1	15.5	15.1	17.0	15.2	18.2	14.4	16.3	15.6	17.9

1/ Total costs include Budget to Implement and Capital Investment (Road construction and reconstruction).

TABLE II-18 (Continued)

	Alternative							Benchmark			
Output/Activity	13	14	15	16	17 PA	Departure	MINLVL	PNV	TIMBER	RANGE	WILDLIFE
ESTIMATED CAPITAL INVESTMENT (Road constr. & reconstr.)	................................Million Dollars Per Year....................................										
Decade 1 ---------------->	2.5	2.5	2.4	2.2	2.5	2.6	0	1.8	4.6	-	-
2	1.6	1.5	1.5	1.4	1.5	1.5	0	2.1	2.6	-	-
3	1.8	1.8	1.7	1.6	1.8	1.8	0	2.0	2.8	-	-
4	2.2	2.1	2.1	1.9	2.1	2.0	0	3.0	2.3	-	-
5	1.6	1.5	1.5	1.4	1.5	1.5	0	2.8	2.3	-	-
10	0	0	0	0	0	0	0	0	0	-	-
15	0	0	0	0	0	0	0	0	0	-	-
ESTIMATED APPROPRIATED DOLLARS											
Decade 1 ---------------->	1.5	1.5	1.4	1.4	1.5	1.5	0	0.6	2.1	-	-
2	0.4	0.4	0.3	0.5	0.3	0.3	0	1.0	0.1	-	-
3	0.5	0.4	0.4	0.5	0.5	0.5	0	0.6	0.3	-	-
4	0.7	0.7	0.7	0.7	0.8	0.8	0	1.2	0	-	-
5	0	0	0	0	0	0	0	0.7	0	-	-
10	0	0	0	0	0	0	0	0	0	-	-
15	0	0	0	0	0	0	0	0	0	-	-
ESTIMATED PURCHASER CREDITS											
Decade 1 ---------------->	1.0	1.0	1.0	0.8	1.1	1.1	0	1.2	2.5	-	-
2	1.2	1.2	1.2	0.9	1.2	1.2	0	1.1	2.5	-	-
3	1.3	1.3	1.3	1.0	1.3	1.3	0	1.4	2.5	-	-
4	1.4	1.4	1.4	1.2	1.3	1.3	0	1.7	2.3	-	-
5	1.6	1.5	1.5	1.4	1.5	1.5	0	2.1	2.3	-	-
10	0	0	0	0	0	0	0	0	0	-	-
15	0	0	0	0	0	0	0	0	0	-	-
ESTIMATED TOTAL COSTS 1/											
Decade 1 ---------------->	16.2	16.0	15.6	13.0	16.2	16.3	3.2	12.9	26.2	-	-
2	14.3	14.1	13.8	12.0	13.8	14.4	2.8	14.0	21.4	-	-
3	16.1	15.7	15.2	13.5	15.6	15.4	2.8	16.9	24.0	-	-
4	17.1	16.8	16.3	14.2	17.2	17.1	2.8	16.7	23.7	-	-
5	16.7	16.4	16.0	13.8	16.4	16.8	2.8	18.4	19.2	-	-
10	18.1	17.8	17.2	15.3	17.9	18.2	2.8	15.8	20.7	-	-
15	17.7	17.4	16.8	14.4	17.2	15.3	2.8	13.5	18.2	-	-

1/ Total costs include Budget to Implement and Capital Investment (Road construction and reconstruction).

TABLE II-18 (continued)

Output/Activity	Alternative											
	1	2	3	4	5	6	7 CD	8	9	10	11	12
ESTIMATED TOTAL BENEFITS (Including Revenues) 1/	...Million Dollars Per Year...											
Decade 1 ----------------->	13.4	16.1	15.7	11.5	13.9	21.7	21.9	15.4	17.4	13.8	15.3	15.5
2	23.4	26.1	25.3	20.3	24.0	27.8	27.0	24.8	22.3	23.1	25.5	24.9
3	34.1	37.5	35.6	36.3	34.3	37.2	43.8	35.9	31.7	33.8	36.2	36.0
4	49.6	54.0	50.5	55.7	50.5	57.7	44.7	49.1	48.0	48.7	50.0	48.5
5	74.8	80.8	75.6	76.1	74.8	79.2	74.4	80.2	69.7	70.8	75.5	79.5
10	76.0	85.1	85.8	84.0	77.6	90.2	74.5	89.5	75.0	75.7	87.4	90.1
15	69.6	79.7	78.5	70.9	71.2	85.5	72.5	78.7	69.3	74.4	81.8	79.4
ESTIMATED TIMBER REVENUES												
Decade 1 ----------------->	6.0	8.5	8.0	4.8	6.2	14.0	14.9	7.7	10.0	6.2	7.6	7.7
2	12.7	15.9	14.7	12.1	13.3	17.1	18.1	14.1	12.5	12.9	14.8	14.1
3	19.9	23.9	21.3	25.4	20.1	22.9	31.6	21.6	17.2	19.8	21.8	21.3
4	31.4	36.4	32.3	41.8	32.4	39.4	28.7	30.8	30.0	31.4	31.5	29.9
5	51.4	57.0	51.0	58.0	51.1	54.4	53.3	55.4	48.7	49.4	51.6	55.1
10	52.6	61.3	61.2	65.9	53.9	65.4	53.5	64.7	52.7	53.0	61.0	64.4
15	46.2	55.9	53.9	52.8	47.5	60.7	51.4	53.9	47.0	51.7	55.4	53.7
ESTIMATED RECREATION REVENUES 2/												
Decade 1 ----------------->	6.9	6.9	6.9	5.9	6.9	6.9	6.3	6.9	6.5	6.8	6.9	6.9
2	9.8	9.3	9.8	7.3	9.8	9.8	8.0	9.8	8.9	9.3	9.8	9.8
3	13.3	12.6	13.3	9.8	13.3	13.3	11.1	13.3	13.4	12.9	13.4	13.6
4	17.1	16.4	17.1	12.7	17.0	17.1	14.8	17.1	16.8	16.1	17.3	17.4
5	22.0	22.4	23.2	16.6	22.3	23.4	19.7	23.4	19.6	20.0	22.6	23.0
10	22.0	22.4	23.2	16.6	22.3	23.4	19.7	23.4	20.9	21.3	25.0	24.3
15	22.0	22.4	23.2	16.6	22.3	23.4	19.7	23.4	20.9	21.3	25.0	24.3
ESTIMATED RANGE REVENUES												
Decade 1 ----------------->	0.04	0.06	0.05	0.05	0.04	0.06	0.04	0.05	0.06	0.04	0.05	0.05
2	0.04	0.05	0.05	0.04	0.04	0.05	0.05	0.05	0.04	0.04	0.05	0.05
3	0.05	0.06	0.05	0.06	0.05	0.06	0.05	0.05	0.06	0.05	0.05	0.05
4	0.05	0.06	0.05	0.06	0.05	0.06	0.05	0.05	0.06	0.05	0.05	0.05
5	0.05	0.06	0.05	0.10	0.05	0.06	0.05	0.05	0.06	0.05	0.06	0.06
10	0.05	0.06	0.05	0.10	0.05	0.06	0.05	0.05	0.06	0.05	0.06	0.06
15	0.05	0.06	0.05	0.10	0.05	0.06	0.05	0.05	0.06	0.05	0.06	0.06

1/ 1978 Dollars

2/ Recreation use, not capacity, is valued.

TABLE II-18 (continued)

	Alternative								Benchmark		
Output/Activity	13	14	15	16	17 PA	Departure	MINLVL	PNV	TIMBER	RANGE	WILDLIFE
	....Million Dollars Per Year..										
ESTIMATED TOTAL BENEFITS (Including Revenues) 1/											
Decade 1 ---------------->	15.5	15.5	15.4	13.2	15.2	12.7	5.1	18.0	20.6	-	-
2	24.9	24.8	24.8	21.8	26.8	26.1	6.1	27.6	25.3	-	-
3	35.8	35.5	35.1	32.7	34.0	31.9	7.6	39.4	33.5	-	-
4	48.0	47.3	46.1	45.8	43.5	41.6	8.3	59.8	51.3	-	-
5	78.4	77.5	75.9	65.5	73.2	69.5	9.3	85.1	78.6	-	-
10	89.3	88.8	87.0	72.2	87.5	96.7	9.3	86.9	91.0	-	-
15	78.8	77.6	76.1	70.4	74.6	66.2	9.3	63.9	85.0	-	-
ESTIMATED TIMBER REVENUES											
Decade 1 ---------------->	7.7	7.7	7.6	5.7	7.3	4.8	0	10.1	14.6	-	-
2	14.1	14.0	14.0	11.6	16.1	15.5	0	13.4	17.9	-	-
3	20.9	20.4	20.0	18.1	19.4	17.2	0	21.2	23.6	-	-
4	29.6	28.7	27.7	27.9	25.0	23.1	0	37.0	38.5	-	-
5	54.3	53.4	52.3	44.0	49.7	45.9	0	61.3	61.8	-	-
10	63.9	63.4	62.1	49.4	61.4	70.5	0	62.5	74.2	-	-
15	53.4	52.2	51.2	47.6	48.4	40.0	0	39.5	68.1	-	-
ESTIMATED RECREATION REVENUES 2/											
Decade 1 ---------------->	6.9	6.9	6.9	6.7	7.1	7.1	4.5	7.0	5.2	-	-
2	9.8	9.8	9.8	9.3	9.8	9.8	5.4	13.3	6.4	-	-
3	13.8	14.0	14.0	13.5	13.6	13.6	6.9	17.1	8.8	-	-
4	17.2	17.4	17.2	16.7	17.3	17.3	7.7	21.6	11.6	-	-
5	22.7	22.7	22.2	20.1	22.1	22.1	8.7	22.4	15.5	-	-
10	24.0	24.0	23.5	21.4	24.8	24.8	8.7	23.0	15.5	-	-
15	24.0	24.0	23.5	21.4	24.8	24.8	8.7	23.0	15.5	-	-
ESTIMATED RANGE REVENUES											
Decade 1 ---------------->	0.05	0.05	0.05	0.04	0.05	0.05	0.04	0.06	0.06	-	-
2	0.05	0.05	0.05	0.04	0.05	0.05	0	0.04	0.06	-	-
3	0.05	0.05	0.05	0.05	0.05	0.05	0	0.06	0.06	-	-
4	0.05	0.05	0.05	0.05	0.05	0.05	0	0.06	0.06	-	-
5	0.06	0.06	0.06	0.05	0.06	0.06	0	0.06	0.06	-	-
10	0.06	0.06	0.06	0.05	0.06	0.06	0	0.06	0.06	-	-
15	0.06	0.06	0.06	0.05	0.06	0.06	0	0.06	0.06	-	-

1/ 1978 Dollars
2/ Recreation use, not capacity, is valued.

TABLE II-18 (continued)

Output/Activity	Alternative 1	2	3	4	5	6	7 CD	8	9	10	11	12
PROJECTED RETURNS TO U.S. GOVERNMENT (Revenues) 1/	....Million Dollars Per Year....											
Decade 1 ------------------>	6.7	9.2	8.7	5.5	7.0	14.8	15.6	8.5	10.7	6.9	8.4	8.5
2	13.5	16.8	15.5	13.0	14.1	17.9	19.0	14.9	13.3	13.8	15.6	14.9
3	20.8	24.8	22.3	26.4	21.0	23.9	32.6	22.6	18.2	20.8	22.7	22.3
4	32.5	37.5	33.4	42.9	33.5	40.5	29.9	32.0	31.2	32.5	32.7	31.1
5	52.7	58.4	52.3	59.4	52.5	55.7	54.7	56.7	50.1	50.7	52.9	56.4
10	54.0	62.7	62.5	67.2	55.3	66.7	54.8	66.0	54.0	54.4	62.3	65.7
15	47.5	57.2	55.3	54.1	48.9	62.0	52.7	55.3	48.3	53.0	56.7	55.0
PROJECTED RETURNS TO STATE												
Decade 1 ------------------>	1.7	2.3	2.2	1.4	1.8	3.7	3.9	2.1	2.7	1.7	2.1	2.1
2	3.4	4.2	3.9	3.2	3.5	4.5	4.7	3.7	3.3	3.4	3.9	3.7
3	5.2	6.2	5.6	6.6	5.3	6.0	8.2	5.6	4.5	5.2	5.7	5.6
4	8.1	9.4	8.4	10.7	8.4	10.1	7.5	8.0	7.8	8.1	8.2	7.8
5	13.2	14.6	13.1	14.8	13.1	13.9	13.7	14.2	12.5	12.7	13.2	14.1
10	13.5	15.7	15.6	16.8	13.8	16.7	13.7	16.5	13.5	13.6	15.6	16.4
15	11.9	14.3	13.8	13.5	12.2	15.5	13.2	13.8	12.1	13.2	14.2	13.8
PRESENT VALUE BENEFITS (4$)	....Million Dollars....											
Total	859.7	951.1	904.6	854.5	872.3	1014.3	971.6	917.4	844.0	853.2	911.9	916.6
Timber	515.9	611.5	554.1	584.0	527.2	662.8	669.3	566.0	516.6	523.5	556.1	561.5
Recreation	318.5	313.8	324.7	244.6	319.6	325.9	277.3	325.7	301.6	304.4	330.2	329.4
Range	1.1	1.4	1.3	1.6	1.1	1.4	1.2	1.3	1.4	1.1	1.3	1.3
PRESENT VALUE COSTS (4$)	383.2	456.4	415.0	360.7	383.8	436.6	438.9	424.6	331.1	351.0	412.5	411.3
PRESENT NET VALUE (4$)	476.5	494.7	489.6	493.8	488.5	577.7	532.7	492.8	512.9	502.2	3/ 499.4	505.3
OPPORTUNITY COSTS	129.0	110.8	115.9	111.7	117.0	27.8	72.8	112.7	92.6	103.3	106.1	100.2
PRESENT VALUE BENEFITS WITHOUT RETURNS TO U.S. GOVERNMENT (4$)	319.5	315.2	326.0	246.2	320.7	327.1	277.8	327.0	302.9	305.8	331.4	330.6
BENEFITS/COST (4$)	....Ratio....											
	2.2:1	2.1:1	2.2:1	2.4:1	2.3:1	2.3:1	2.2:1	2.2:1	2.2:1	2.4:1	2.2:1	2.2:1
EMPLOYMENT 2/	....Person Years - Change from 1980 Situation....											
Decade 1 ------------------>	-68	498	-60	-707	-138	696	435	213	73	-207	209	205
2	188	955	673	94	484	1624	845	603	542	460	669	638
5	2342	3172	2855	2179	2457	3261	2293	2919	2094	2175	2796	2894
INCOME 2/	....Million Dollars - Change from 1980 Situation....											
Decade 1 ------------------>	-1.5	5.7	-.5	-9.5	-2.2	8.6	5.4	2.3	0.7	-3.0	2.2	2.2
2	1.4	9.7	6.2	-.4	4.1	17.0	9.3	5.6	4.8	3.8	6.4	6.0
5	23.2	32.8	29.0	22.5	24.6	33.3	23.8	30.2	21.6	22.1	28.7	30.0

1/ 1978 Dollars. Projected Returns to U.S. Government includes purchaser credits and KV collections.

2/ In 1980, the Flathead National Forest contribution to zone of influence (Flathead, Lake, and Missoula counties) employment and income was: 3638 person years; $39,826,000 of personal income.
Projections of impacts are developed using an input-output model.

3/ Present Net Value (7 1/8$) = 155.26 Million Dollars

TABLE II-18 (continued)

	Alternative						Benchmark				
Output/Activity	13	14	15	16	17 PA	Departure	MINLVL	PNV	TIMBER	RANGE	WILDLIFE
PROJECTED RETURNS TO U.S. GOVERNMENT (Revenues) 1/	......Million Dollars Per Year......										
Decade 1 ---------------->	8.4	8.4	8.4	6.4	8.1	8.1	.7	10.8	15.4	-	-
2	14.9	14.9	14.9	12.4	16.9	17.8	.7	14.3	18.8	-	-
3	21.9	21.4	21.0	19.0	20.3	19.9	.7	22.2	24.6	-	-
4	30.7	29.8	28.8	29.0	26.1	26.4	.7	38.1	39.6	-	-
5	55.7	54.7	53.7	45.3	51.0	48.8	.7	62.6	63.1	-	-
10	65.2	64.8	63.5	50.7	62.7	71.8	.7	63.8	75.5	-	-
15	54.7	53.5	52.5	48.9	49.7	41.3	.7	40.8	69.4	-	-
PROJECTED RETURNS TO STATE											
Decade 1 ---------------->	2.1	2.1	2.1	1.6	2.0	2.0	.2	2.7	3.8	-	-
2	3.7	3.7	3.7	3.1	4.2	4.5	.2	3.6	4.7	-	-
3	5.5	5.3	5.2	4.8	5.1	5.0	.2	5.5	6.1	-	-
4	7.7	7.4	7.2	7.3	6.5	6.6	.2	9.5	9.9	-	-
5	13.9	13.7	13.4	11.3	12.7	12.2	.2	15.6	15.8	-	-
10	16.3	16.2	15.9	12.7	15.7	18.0	.2	15.9	18.9	-	-
15	13.7	13.4	13.1	12.2	12.4	10.3	.2	10.2	17.4	-	-
PRESENT VALUE BENEFITS (4%)	......Million Dollars......										
Total	910.3	902.4	887.1	802.2	884.2	887.2	173.3	989.1	957.7	-	-
Timber	556.5	547.2	536.3	468.7	527.3	530.6	0	641.8	711.1	-	-
Recreation	328.2	329.6	326.2	308.3	331.2	331.2	156.0	321.7	221.2	-	-
Range	1.3	1.3	1.3	1.1	1.3	1.3	0.4	1.4	1.5	-	-
PRESENT VALUE COSTS (4%)	405.9	399.4	389.4	335.4	401.2	404.2	73.2	383.6	586.2	-	-
PRESENT NET VALUE (4%)	504.4	503.0	497.7	466.8	483.0	439.4	100.1	605.5	371.5	-	-
OPPORTUNITY COSTS	101.1	102.5	107.8	138.7	122.5	166.1	498.3	0	226.9	-	-
PRESENT VALUE BENEFITS WITHOUT RETURNS TO U.S. GOVERNMENT (4%)	329.4	330.7	326.3	309.3	332.5	332.1	156.3	323.0	222.7	-	-
BENEFITS/COST (4%)	......Ratio......										
	2.2:1	2.3:1	2.3:1	2.4:1	2.2:1		2.4:1	2.6:1	1.6:1	-	-
EMPLOYMENT 2/	......Person Years - Change from 1980 Situation......										
Decade 1 ---------------->	197	196	176	-344	201	291	-1932	89	1564	-	-
2	616	623	612	230	664	814	-2304	615	1550	-	-
5	2826	2690	2582	1801	2710	2605	-1450	3117	1957	-	-
INCOME 2/	......Million Dollars - Change from 1980 Situation......										
Decade 1 ---------------->	2.1	2.1	1.9	-4.9	2.1	3.3	-24.1	0.8	20.0	-	-
2	5.8	5.9	5.7	0.9	6.4	8.3	-27.3	5.8	19.1	-	-
5	29.3	27.9	26.6	17.5	27.6	26.2	-18.3	32.8	23.7	-	-

1/ 1978 Dollars. Projected Returns to U.S. Government includes purchaser credits and KV collections.

2/ In 1980, the Flathead National Forest contribution to zone of influence (Flathead, Lake, and Missoula counties) employment and income was: 3638 person years; $39,826,000 of personal income.
Projections of impacts are developed using an input-output model.

TABLE II-19 Management Emphasis and Intensity Acreage Summary - Flathead National Forest

MANAGEMENT EMPHASIS	MANAGEMENT INTENSITY	ALTERNATIVE										
		1	2	3	4	5	6	7CD	8	9	10	11
		Acres										
Minimum Management 1/	Low	43662	52846	38687	320656	70480	39448	58086	38993	45747	109728	38490
Dispersed Recreation 1/	Low	69013	41916	73995	59861	92574	2974	180228	68	723	77163	68
	Moderate	2398	15676	3529	145	2148	22395	194461	0	17746	2148	0
	High	196857	289567	278348	43193	231034	318739	0	313280	55329	81907	268148
	SUBTOTAL	268268	347159	355872	103199	325756	344108	374689	313348	73798	161218	268216
Developed Recreation 1/	Reduced Service	91	130	0	72	88	341	0	0	341	88	0
	Full-Service	93	85	215	64	122	106	1267	215	106	122	215
	Investment	0	0	0	0	0	0	967	0	0	0	0
	SUBTOTAL	184	215	215	136	210	447	2234	215	447	210	215
Retention VQO with Roads 2/	Low	8908	12340	6477	11463	7076	0	2893	5487	0	6886	5487
	Moderate	0	0	0	0	0	0	19152	0	0	0	0
	High	0	0	0	0	0	0	5266	0	0	0	0
	SUBTOTAL	8908	12340	6477	11463	7076	0	27311	5487	0	6886	5487
Retention VQO without Roads 2/	Low	0	3778	4077	8292	857	0	61	4077	0	857	4077
	Moderate	0	0	0	0	0	0	4075	0	0	0	0
	SUBTOTAL	0	3778	4077	8292	857	0	4136	4077	0	857	4077
Partial Retention with Roads 2/	Low	38783	9448	116177	6114	16685	0	4094	53730	0	16918	53631
	Moderate	0	0	0	0	0	0	76754	0	0	0	0
	High	0	0	0	0	0	0	0	0	0	0	0
	SUBTOTAL	38783	9448	116177	6114	16685	0	80848	53730	0	16918	53631
Partial Retention without Roads 2/	Low	2144	0	9808	0	587	0	0	8513	0	587	8513
Wilderness 1/	Low	0	287528	0	1069954	0	0	996381	0	20	0	0
	High	1069954	782426	1069954	0	1069954	1069954	73573	1069954	1565303	1266737	1118808
	SUBTOTAL	1069954	1069954	1069954	1069954	1069954	1069954	1069954	1069954	1565323	1266737	1118808
White-Tailed Deer 2/	Low	4050	471	237	0	0	0	5856	237	0	0	237
	Moderate	80	2729	734	1848	0	0	7883	734	0	0	734
	High	7590	10349	13250	7910	18727	1386	0	13250	898	18411	13250
	SUBTOTAL	11720	13549	14221	9758	18727	1386	13739	14221	898	18411	14221
Grizzly Bear 2/	Low	124347	0	0	0	0	0	0	0	0	0	0
	Moderate	0	0	0	0	0	0	0	0	0	0	0
	High	197750	0	37695	0	0	0	35305	94197	0	0	94197
	SUBTOTAL	322097	0	37695	0	0	0	35305	94197	0	0	94197
Riparian Wildlife 1/	Low	0	0	0	0	0	0	3562	0	0	0	0
	Moderate	7	0	0	0	0	0	750	0	0	0	0
	High	41197	17956	32198	41207	41212	41252	2144	32095	39637	40985	31916
	SUBTOTAL	41204	17956	32198	41207	41212	41252	6456	32095	39637	40985	31916
Mule Deer and Elk 2/	Low	9562	1617	3630	13669	227	2955	8299	4045	84	87	4045
	Moderate	1188	3674	1232	2622	255	3024	3996	1337	2173	210	1337
	High	3788	32203	32234	19249	43516	17621	11124	33911	4564	41080	33911
	SUBTOTAL	14538	37494	37096	35540	43998	23600	23419	39293	6821	41377	39293

TABLE II-19 Management Emphasis and Intensity Acreage Summary - Flathead National Forest (Continued)

MANAGEMENT EMPHASIS	MANAGEMENT INTENSITY	ALTERNATIVE						BENCHMARK				
		12	13	14	15	16	17 PA	PNV	MIN LVL	MAX TBR	WLDLF	RANGE
		Acres										
Minimum Management 1/	Low	38491	38053	37009	34789	42659	41953	156467	1229613	368295	397309	393114
Dispersed Recreation 1/	Low	68	4	4	0	41971	158	9333	8902	0	1136	0
	Moderate	0	0	0	0	1465	0	0	0	0	0	0
	High	250682	216074	214574	181016	83557	228519	274093	0	0	0	0
	SUBTOTAL	250750	216078	214578	181016	126993	228677	283426	8902	0	1136	0
Developed Recreation 1/	Reduced Service	0	0	0	0	83	0	341	0	0	0	0
	Full-Service	215	215	215	215	55	314	106	0	0	0	0
	Investment	0	0	0	0	0	0	0	0	0	0	0
	SUBTOTAL	215	215	215	215	138	314	447	0	0	0	0
Retention VQO with Roads 2/	Low	5484	5432	5432	5432	8504	3753	0	0	0	2960	5243
	Moderate	0	0	0	0	0	0	0	0	0	0	0
	High	0	0	0	0	0	0	0	0	0	0	0
	SUBTOTAL	5484	5432	5432	5432	8504	3753	0	0	0	2960	5243
Retention VQO without Roads 2/	Low	3953	3203	3203	3203	0	0	0	0	0	0	0
	Moderate	0	0	0	0	0	0	0	0	0	0	0
	SUBTOTAL	3953	3203	3203	3203	0	0	0	0	0	0	0
Partial Retention with Roads 2/	Low	53145	52319	52319	52319	37973	48765	0	0	8354	958	17228
	Moderate	0	0	0	0	0	0	0	0	0	0	0
	High	0	0	0	0	0	30	0	0	0	0	0
	SUBTOTAL	53145	52319	52319	52319	37973	48795	0	0	8354	958	17228
Partial Retention without Roads 2/	Low	8513	8302	8302	8302	1264	7551	0	0	0	0	0
Wilderness 1/	Low	0	0	0	0	0	0	0	1069954	1069954	1069954	1069954
	High	1152443	1213206	1266640	1330159	1443778	1168034	1069954	0	0	0	0
	SUBTOTAL	1152443	1213206	1266640	1330159	1443778	1168034	1069954	1069954	1069954	1069954	1069954
White-Tailed Deer 2/	Low	237	237	237	237	4050	1824	0	0	2971	1634	1386
	Moderate	734	734	734	734	80	667	0	0	0	1612	408
	High	13184	13184	13184	13184	7590	16401	1386	0	1352	13623	0
	SUBTOTAL	14155	14155	14155	14155	11720	18892	1386	0	4323	16869	1794
Grizzly Bear 2/	Low	0	0	0	0	72034	0	0	0	0	0	0
	Moderate	0	0	0	0	0	98687	0	0	0	0	0
	High	80924	80886	31697	20576	68941	60	0	0	0	0	0
	SUBTOTAL	80924	80886	31697	20576	140975	98747	0	0	0	0	0
Riparian Wildlife 1/	Low	0	0	0	0	0	0	0	0	5073	45992	45992
	Moderate	0	0	0	0	6	0	0	0	0	0	0
	High	32052	31836	31375	30973	39607	45474	41252	0	0	0	0
	SUBTOTAL	32052	31836	31375	30973	39613	45474	41252	0	5073	45992	45992
Mule Deer and Elk 2/	Low	4045	2793	2793	2670	7209	10107	3112	0	18911	0	21260
	Moderate	1337	1337	1337	1309	1188	5453	2089	0	1699	8091	4288
	High	33911	32334	32334	30581	3160	31148	14662	0	7097	32698	460
	SUBTOTAL	39293	36464	36464	34560	11557	46708	19863	0	27707	40789	26008

TABLE II-19 Management Emphasis and Intensity Acreage Summary - Flathead National Forest (Continued)

MANAGEMENT EMPHASIS	MANAGEMENT INTENSITY	ALTERNATIVE 1	2	3	4	5	6	7CD	8	9	10	11
		Acres										
Timber with Roads	Low	284206	380960	290908	415192	408030	559188	33669	320284	354578	434338	319081
	Moderate	75816	220514	102651	175458	109851	158122	473492	115916	157214	80568	115870
	High	59031	56993	105320	64258	53171	45338	49247	111185	38167	12911	110803
	SUBTOTAL	419053	658467	498879	654908	571052	762648	556408	547385	549959	527817	545754
Timber without Roads	Low	458	32247	29037	27835	7783	7630	5588	25011	22356	0	23744
	Moderate	6	0	0	0	0	0	1692	0	971	7783	0
	SUBTOTAL	464	32247	29037	27835	7783	7630	7280	25011	23327	7783	23744
Riparian Timber 2/	Low	0	2500	0	0	0	0	7415	0	0	0	0
	Moderate	0	20751	9009	0	0	0	25866	9009	0	0	8966
	SUBTOTAL	0	23251	9009	0	0	0	33281	9009	0	0	8966
Amenity Values 1/	Low	49657	10358	29762	0	114763	0	0	33536	0	104994	33536
Jewel Basin 1/	Low	0	0	0	15368	0	0	15368	0	0	0	0
	Moderate	0	15368	0	0	0	15368	0	0	8	0	0
	High	15368	0	15368	0	15368	0	0	15368	0	0	15368
	SUBTOTAL	15368	15368	15368	15368	15368	15368	15368	15368	8	0	15368
Wild and Scenic River 1/	Low	0	0	0	13838	0	0	0	0	0	0	0
	Moderate	0	13838	0	0	0	13838	11793	0	0	0	0
	High	13838	0	13838	0	13838	0	0	13838	13714	13838	13838
	SUBTOTAL	13838	13838	13838	13838	13838	13838	11793	13838	13714	13838	13838
Big Mountain Winter Sports Area 1/	Low	2000	0	0	0	0	2000	2000	0	2000	0	0
	High	0	3574	3474	3574	3499	343	0	3574	343	3499	3574
	SUBTOTAL	2000	3574	3474	3574	3499	2343	2000	3574	2343	3499	3574
Administrative Sites 1/	Low	465	465	463	465	462	285	0	463	285	462	463
	Moderate	0	0	0	0	0	0	0	0	0	0	0
	SUBTOTAL	465	465	463	465	462	285	0	463	285	462	463
Coram Experimental Forest 1/	Low	8020	8020	8020	8020	8020	8020	8020	8020 →	8020	8020	8020
		*******	*******	*******	*******	*******	*******	*******	*******	*******	*******	*******
Unsuitable for Timber Management 1/		1512620	1539753	1567851	1576417	1663562	1535063	1548600	1529404	1749322	1709691	1532444
Suitable Except Nonproductive Acres 2/		398190	99860	234560	71167	87930	24986	218039	228527	7719	85036	228385
Designated to Timber Emphasis		419517	690714	527916	682743	578835	770278	563688	572396	573286	535600	569498
		*******	*******	*******	*******	*******	*******	*******	*******	*******	*******	*******
GRAND TOTAL ACRES 3/		2330327	2330327	2330327	2330327	2330327	2330327	2330327	2330327	2330327	2330327	2330327
Total Suitable for Timber Management		673045	775015	715289	736855	651206	779706	721766	720227	578020	612320	717283

1/ Designated lands are unsuitable for Timber Management.
2/ Designated acres are suitable except when applied to nonproductive lands.
3/ There are 31,240 acres of large lakes and reservoirs within National Forest ownership which are not included in the FORPLAN model.

NOTE: The management emphasis and intensity acreage summary was Appendix C in the original DEIS.

READEX FICHE best copy available

TABLE II-19 Management Emphasis and Intensity Acreage Summary - Flathead National Forest

MANAGEMENT EMPHASIS	MANAGEMENT INTENSITY	ALTERNATIVE						BENCHMARK				
		12	13	14	15	16	17 PA	PNV	MIN LVL	MAX TBR	WLDLF	RANGE
		Acres										
Timber with Roads	Low	317214	316190	316010	309658	273827	304712	576743	0	441188	605332	553773
	Moderate	115625	115175	115175	113067	73499	107970	122259	0	210804	79447	158634
	High	110708	110429	109906	108092	58177	111226	3206	0	110834	17001	18432
	SUBTOTAL	543547	541794	541091	530817	405503	523908	702208	0	762826	701780	730839
Timber without Roads	Low	0	0	21933	20062	364	19566	10641	0	0	15974	3489
	Moderate	23712	22470	0	0	6	0	4829	0	5695	0	0
	SUBTOTAL	23712	22470	21933	20062	370	19566	15470	0	5695	15974	3489
Riparian Timber 2/	Low	0	0	0	0	0	0	0	0	0	0	0
	Moderate	8966	9009	9009	7454	0	10705	0	0	40919	0	0
	SUBTOTAL	8966	9009	9009	7454	0	10705	0	0	40919	0	0
Amenity Values 1/	Low	33421	31010	31010	30400	34957	40357	0	0	0	0	0
Jewel Basin 1/	Low	0	0	0	0	0	0	0	0	15368	15368	15368
	Moderate	0	0	0	0	0	0	15368	0	8	0	0
	High	15368	0	0	0	0	0	0	0	0	0	0
	SUBTOTAL	15368	0	0	0	0	0	15368	0	15368	15368	15368
Wild and Scenic River 1/	Low	0	0	0	0	0	0	0	13838	11793	11793	11793
	Moderate	0	0	0	0	0	0	0	0	0	0	0
	High	13838	13838	13838	13838	13838	13838	13838	0	0	0	0
	SUBTOTAL	13838	13838	13838	13838	13838	13838	13838	13838	11793	11793	11793
Big Mountain Winter Sports Area 1/	Low	0	0	0	0	2000	0	2000	0	2000	2000	2000
	High	3574	3574	3574	3574	0	3574	343	0	0	0	0
	SUBTOTAL	3574	3574	3574	3574	2000	3574	2343	0	2000	2000	2000
Administrative Sites 1/	Low	463	463	463	463	465	1411	285	0	0	0	0
	Moderate	0	0	0	0	0	50	0	0	0	0	0
	SUBTOTAL	463	463	463	463	465	1461	285	0	0	0	0
Coram Experimental Forest 1/	Low	8020	8020	8020	8020	8020	8020	8020	8020	8020	8020	8020
		*******	*******	*******	*******	*******	*******	*******	*******	*******	*******	*******
Unsuitable for Timber Management 1/		1548635	1556293	1606722	1633447	1712461	1551702	1591400	2330327	1480503	1551572	1546241
Suitable Except Nonproductive Acres 2/		214433	209770	160581	146001	211993	235151	21249	0	81303	61576	50273
Designated to Timber Emphasis		567259	564264	563024	550879	405873	543474	717678	0	768521	717754	734328
		*******	*******	*******	*******	*******	*******	*******	*******	*******	*******	*******
GRAND TOTAL ACRES 3/		2330327	2330327	2330327	2330327	2330327	2330327	2330327	2330327	2330327	2330902	2330842
Total Suitable for Timber Management		714699	707344	686589	670627	511957	670670	723130	0	835747	765439	835747

1/ Designated lands are unsuitable for Timber Management.
2/ Designated acres are suitable except when applied to nonproductive lands.
3/ There are 31,240 acres of large lakes and reservoirs within National Forest ownership which are not included in the FORPLAN model.

NOTE: The management emphasis and intensity acreage summary was Appendix C in the original DEIS.

C. NET PUBLIC BENEFIT AND NONPRICED BENEFITS ADDRESSED IN THE ALTERNATIVES

The overall conceptual measure of value of each of the alternatives is net public benefit. Net public benefit is summarized here as a preface to discussing those benefits that cannot be expressed in economic terms.

Net public benefit is the overall long-term value to the nation of all outputs and positive effects (called benefits) less all associated Forest inputs and negative effects (called costs) resulting from management of Flathead National Forest lands. Many priced benefits and all financial costs of management can be measured in dollar terms. Other nonpriced benefits and some negative effects, however, cannot be measured quantitatively or cannot be fully valued in financial terms (see Appendix B, Section IV). A major goal of forest planning is to provide information that helps determine which alternative provides the mix that most closely responds effectively to issues, concerns, and opportunities while maximizing the net public benefit of managing the National Forest.

Net public benefit is maximized by the alternative which has the greatest excess of benefits over costs. The choice of the alternative that maximizes net public benefit is a subjective decision.

The principal benefits and costs relevant to making that judgement for the Flathead National Forest are associated with the issues discussed in Appendix A and with legislation underlying the planning process. Section D details costs and benefits that can be measured in financial terms. Those benefits that cannot be quantified are discussed below. Section E then compares changes in economic benefits with differences in responses to issues. Because these are summary statements, a fully informed judgement of the alternatives also requires an understanding of the results displayed elsewhere in this document.

The major nonpriced benefits are described in detail in Appendix B, Section IV, and are summarized here. Nonpriced benefits reflect issues that are not directly addressed by the alternative PNV comparisons. The resolutions of these issues varies significantly by alternative and can be measured by physical indicators such as acres. As discussed above, more nonpriced outputs often result in reduced priced outputs (lower PNV). Tables II-18 and II-24 in this chapter show the tradeoffs between providing priced outputs and nonpriced outputs. Alternatives are listed in order of decreasing PNV to show some trends between PNV (priced outputs) and achievement of nonpriced resource goals. The indicators are used to estimate the relative achievement of nonpriced resource goals among alternatives. The indicators do not fully quantify or place a value on the nonpriced benefits but they indicate differences in levels of nonpriced benefits between alternatives.

Additional tradeoffs involving outputs and benefits not quantified in PNV are described below:

1. MAJOR NONPRICED BENEFITS WITH LARGE DIFFERENCES AMONG ALTERNATIVES

Although there are many nonpriced benefits resulting from Forest management, eight were identified as major benefits on the Flathead National Forest.

In the discussion that starts in Major Tradeoffs Among Alternatives in this chapter, each alternative is compared as to how well it addresses selected nonpriced components of net public benefits. Selection was based on the public issues and management concerns identified in this planning process. The following components of net public benefits were selected for analysis because they vary significantly by alternative:

a. **Big-game hunting quality**--PNV calculations include the number of hunting recreation visitor days as a simple proportion of total recreation opportunities but do not include the quality of the hunting experience. Decreases in PNV occur when land is managed as winter range to increase big-game population potentials.

   Big-game hunting quality indicators include number and type of hunting permits granted, length of the hunting season, diversity of hunting experiences available, and opportunities for a successful hunt. According to the Proposed Montana Department of Fish, Wildlife, and Parks "Road Management Policy," the first two indicators are influenced by the relative security of big-game habitat. Two of the manageable factors influencing habitat security are road access and available hiding cover.

   Each alternative was examined to determine its effect on these factors. In addition, each alternative was evaluated for diversity of hunting experiences available and the opportunities that would be available for a successful hunt in terms of big-game population potentials.

b. **Dispersed recreation setting quality and diversity**--PNV accounts for the number of dispersed recreation opportunities but does not address quality and diversity. Providing a wide range of settings varying in the level of development and access ensures that the broadest segment of the public will find quality recreational experiences both now and in the future. Also, certain environmental settings have a high potential for providing quality recreational experiences. Certain landform types, vegetative types, scenery, water, and wildlife are factors that can contribute to the quality of the recreation setting.

   The alternatives were analyzed with respect to the quality and variety of the lands managed to provide recreation opportunities. Areas where public comments have indicated interest in maintaining a primitive or semiprimitive recreation setting were examined in each alternative. Areas of interest include the north end of Glacier View Ranger District, the Swan Mountain Range, Glacier Slough, and the Spotted Bear River. Each alternative was evaluated to assess its impacts on these areas.

c. **Threatened and Endangered Species Habitat**--the value of maintaining or restoring viable populations of threatened and endangered species is not included in the calculations of PNV. Decreases in PNV occur when timber harvest is constrained to achieve grizzly bear management objectives and additional habitat improvement costs occur.

All alternatives respond similarly to bald eagle and peregrine falcon habitat. Therefore, the ID team examined impacts of each alternative on grizzly bear and gray wolf habitat and on the opportunities to achieve a recovered population of grizzly bears.

d. **Water Quality**--Water quality is not considered in PNV calculations. The quality of Forest waters is a significant component of public net benefits. Forest streams, lakes, and rivers contribute directly to several community water supplies and to other domestic water systems that indirectly receive runoff from Forest land. In addition, outfitter camps, resorts, summer homes, and public recreation sites on National Forest System land utilize Forest water. Highly significant recreational and fisheries values are associated with Forest streams and Flathead Lake, located off the Forest but fed by Flathead National Forest watersheds.

These values are not included in the alternatives' PNV but are examined in the discussion of net public benefits. Alternatives are evaluated in terms of the Flathead National Forest's "Watershed Management Guidelines."

e **Visual Quality of the Forest Landscape**--Visual management constrains timber management options, thereby contributing to increased costs and reduced PNV. Visual quality benefits do not contribute to PNV. Therefore, visual management objectives for each alternative are evaluated in terms of their contribution to net public benefits.

The alternatives vary by the visual quality goals. The goals differ by how much emphasis is placed on achieving the Forest's potential visual quality objectives.

f. **Nongame Species Wildlife Habitat**--The value of nongame species habitat is not included in PNV. PNV is reduced when areas are managed to protect nongame species and timber management options are reduced. Several laws require recognition of all wildlife species on National Forest System lands, including NFMA which requires maintenance "of viable populations of all existing native species." Alternatives are evaluated in terms of the amount of habitat provided to maintain viable populations.

g. **Local Economic Stability**--The value of maintaining or increasing local economic stability is not included in PNV. Maintenance of a sustained flow of Forest resources and uses to local communities decreases PNV because management options are decreased. Economic stability implies a dynamic, diverse, orderly, changing, and growing economy.

The degree to which the production of goods and services affects economic stability with each alternative is assessed in the calculation of net public benefits. The variety and volume of goods and services contribute to local economic stability through impacts on potential employment and income in the zone of influence.

h. **Nonrecreation Wilderness Values**--The value of maintaining more than a primitive recreation setting on the Forest is important. The qualities of natural integrity, natural appearance, and opportunities for solitude are important. Wilderness advocates have brought out several nonpriced benefits of these "naturally-functioning"* systems; "clean air and water, unblemished landscapes," "free-roaming wildlife populations, spiritual fulfillment and a sense of freedom and dignity in an increasingly crowded and regimented world."* Other nonpriced benefits include the natural gene pool and scientific values attached to wilderness. Areas with well established primitive use patterns and those close to Kalispell are highly valued. Areas of particular interest, due to their high potential for providing qualities beyond the primitive recreation experience, include the Swan Range, the north end of Glacier View Ranger District, and the Spotted Bear River.

2. NONPRICED BENEFITS AMONG ALTERNATIVES

Plant Community Composition--The value of maintaining varied plant communities is not included in PNV and, therefore, is considered a nonpriced component of net public benefits. Scientific research opportunities, maintenance of existing genetic strains of plants and animals, and control of insect and disease populations are some of the reasons plant diversity is examined.

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* Drawn from Bill Cunningham's (Montana Wilderness Association Conservation Director) writeup, FUTURE TRENDS IN NATIONAL FOREST MANAGEMENT: A PERSPECTIVE FROM THE MWA, December 1983.

The indicators used to describe plant and animal community diversity are the amount of potential old growth below 5000 feet elevation and the insect and disease hazard and risk index. The insect and disease hazard and risk index is designed to measure the relative effect of various Forest management practices on maintaining natural diversity and insect and disease resistance. Old growth is the most sensitive successional stage on the Flathead National Forest. Although the quantity and quality of diversity does vary among alternatives, all alternatives would provide adequate diversity in meeting management objectives.

D. SIGNIFICANT DIFFERENCES IN ECONOMIC VALUES AMONG ALTERNATIVES

This section explains the tradeoffs that would occur among the priced economic benefits and outputs.

1. DIFFERENCES IN PRESENT NET VALUE COMPARISONS

PNV (Present Net Value) estimates the cost efficiency of each alternative of management of the land and water resources of the Forest and is an extremely important measure of the economic value of the Forest. It is one component of net public benefits. It is calculated by subtracting management costs from the priced benefits that would be produced under an alternative, after both costs and benefits are appropriately discounted at 4 percent to the present (see Appendix B, Chapter IV). PNV measures the net economic value of outputs for which dollar values are calculated.

The alternatives are ranked by decreasing PNV in Table II-20. The Maximum PNV Benchmark is provided as a reference point.

Generally, as PNV decreases across alternatives so do discounted costs and discounted benefits. This general pattern exists because timber production dominates both benefits and costs. Table II-21 shows that variations in benefits and costs associated with other resources are relatively minor. The total discounted benefits associated with timber are always greater than the total discounted costs directly attributable to producing those benefits. Some recreation benefits are joint outputs of timber management. This may cause the net benefits of recreation to be somewhat overestimated and those of timber management to be underestimated.

As timber harvest decreases, PNV decreases. The alternative with the highest PNV (Alternative 6) also had the highest level of timber harvesting; the alternative with lowest PNV (Alternative 16) had the lowest level of timber harvesting. Costs decrease proportionally to the decrease in PNV.

TABLE II-20 Present Net Value, Discounted Costs, and Benefits of Alternatives and Benefit/Cost Indices - Flathead National Forest

Alternative/ Benchmark	Present Net Value MM$	Present Net Value Change	Present Value Benefits MM$	Present Value Benefits Change	Present Value Costs MM$	Present Value Costs Change	Benefit/ Cost Indices
Maximum PNV	606		989		384		2.6
6	578	-28	1014	25	436	52	2.3
7 CD	533	-45	972	-42	439	3	2.2
9	513	-20	844	-128	331	-108	2.2
12	505	-8	917	73	411	80	2.2
13	504	-1	910	-7	406	-5	2.2
14	503	-1	902	-8	399	-7	2.3
10	502	-1	853	-49	351	-48	2.4
11	499	-3	912	59	413	62	2.2
15	498	-1	887	-25	389	-24	2.3
2	495	-3	951	64	456	67	2.1
4	494	-1	855	-96	361	-95	2.4
8	493	-1	917	62	425	64	2.2
3	490	-3	904	-13	415	-10	2.2
5	489	-1	872	-32	384	-31	2.3
17 PA	483	-6	884	12	401	17	2.2
1	477	-6	860	-24	383	-18	2.2
16	467	-10	802	-58	335	-48	2.4
Minimum Level	100	-367	173	-629	73	-262	2.4

TABLE II-21 Present Net Value, Discounted Benefits, and Costs for Resource Groups 1/ (Million Dollars) - Flathead National Forest

Alternatives/ Benchmark	Present Net Value	Discounted Benefits				Discounted Costs		
		Timber	Recreation	Range	2/ Other	Timber	Roads	Other 3/
Max PNV	605.5	641.8	321.7	1.4	24.4	122.0	159.4	102.2
6	577.7	662.8	325.9	1.4	24.4	143.1	174.8	118.7
7CD	532.7	669.3	277.3	1.2	24.4	140.7	176.9	121.3
9	512.9	516.6	301.6	1.4	24.4	105.5	116.4	109.2
12	505.3	561.5	329.4	1.3	24.4	130.9	154.4	126.0
13	504.4	556.5	328.2	1.3	24.4	129.8	151.7	124.4
14	503.0	547.2	329.6	1.3	24.4	128.0	148.5	122.9
10	502.2	523.5	304.4	1.1	24.4	95.7	136.3	119.0
11	499.4	556.1	330.2	1.3	24.4	129.1	156.4	127.0
15	497.7	536.3	326.2	1.3	24.4	123.9	144.3	121.2
2	494.7	611.5	313.8	1.4	24.4	163.9	168.0	124.5
4	493.8	584.0	244.6	1.6	24.4	107.2	136.2	117.3
8	492.8	566.0	325.7	1.3	24.4	131.8	164.5	128.3
3	489.6	554.1	324.7	1.3	24.4	128.1	159.9	127.0
5	488.5	527.2	319.6	1.1	24.4	100.5	157.8	125.5
17	483.0	527.3	331.2	1.3	24.4	125.6	149.0	126.6
1	476.5	515.9	318.5	1.1	24.4	101.5	155.3	126.4
16	466.8	468.7	308.3	1.1	24.4	84.9	133.6	116.9
Min Level	100.1	0.0	156.0	.4	16.9	.0	.0	73.2

1/ The direct comparison of benefits and costs by individual resource can be misleading because all the costs include nonseparable multi-resource management costs.

2/ Includes Mineral Leasing, Land Use, and Power.

3/ Discounted Recreation and Range Costs are included here, variation between alternatives is small.

Figure II-16 displays PNV by alternative. The maximum PNV of the Forest is $605.5 million as defined by the PNV Benchmark. Figure II-16 shows that there are significant differences in economic values among alternatives.

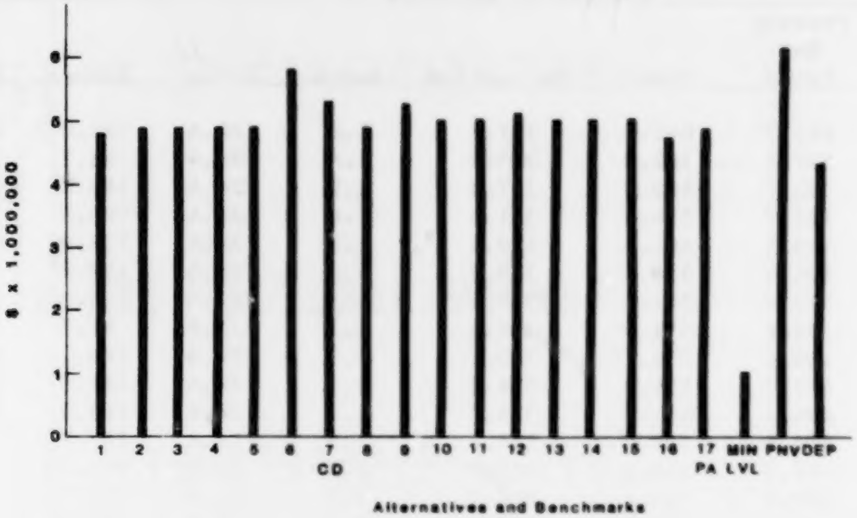

Figure II-16 . Present Net Value

Flathead National Forest

An exception to this general pattern of changes in PNV and timber harvesting is Alternative 9. Alternative 9 had the third highest PNV of all the Alternatives but had the lowest long-term sustained yield. This Alternative, which maximized the amount of area in wilderness, emphasized timber production in the nonwilderness areas. Although having a moderate timber harvest level, it had a high PNV due to nontimber resources only being minimally managed and protected and also because the nondeclining yield constraint was not present. Cost of wilderness management on a per acre basis is minimal compared to nonwilderness multiple-use management. Timber outputs and revenues in Decades 1 and 2 are not greatly affected by all the roadless inventory being managed as wilderness. The net result is a relatively high PNV and the Forest offering primarily two contrasting recreation opportunities. One recreation opportunity would be in the intensively managed roaded timberlands, and the second in a wilderness environment.

The priced benefits displayed do not include those associated with possible future minerals production. Substantial minerals resources are known to exist on the Forest, but the timing of their development and the quantities that will be extracted are highly speculative. These priced benefits, however, may well differ significantly among alternatives due to differences in leasing stipulations.

2. U.S. TREASURY CASH FLOWS AND NONCASH BENEFITS

Net cash flows to the U.S. Treasury are the dollar returns to the treasury less total budget costs. Table II-22 displays the discounted net cash flow to the U.S. Treasury for each alternative in order of decreasing discounted net receipts. Returns exceed expenditures in all alternatives. While the benefits displayed in Tables II-20 and II-21 estimate the full potential, discounted dollar returns to the U.S. Treasury and taxpayers *if* full charges were made, the focus here is limited to the actual net receipts collected under current laws and policies. Cash receipts include returns from timber sales, livestock grazing fees, campground fees, mineral permits, and special use fees.

Timber receipts make up 90 percent of the total receipts in the first two decades and increase to 95 percent in later decades. The variance between alternatives is primarily due to the timber harvest level. In addition, timber receipts are affected by the per unit stumpage value of timber harvested. Other returns are campground fees, mineral leases, and special use fees, and amount to $760,000 per year the first decade in all alternatives. Most of the receipts from nontimber resources are from mineral leasing. Returns from timber sales include purchaser credits and KV collections.

Returns are projected to increase in all alternatives because of real stumpage price and timber harvest level increases through the fifth decade. Net receipts increase much more rapidly than costs in each decade for all alternatives. The annual returns by resource for Decades 1-5, 10, and 15 are displayed in Table II-18.

The portion of economic benefits which are actual returns to the U.S. Treasury are displayed in Figure II-17 for Decade 1. For comparison with subsequent decades, refer to Table II-18.

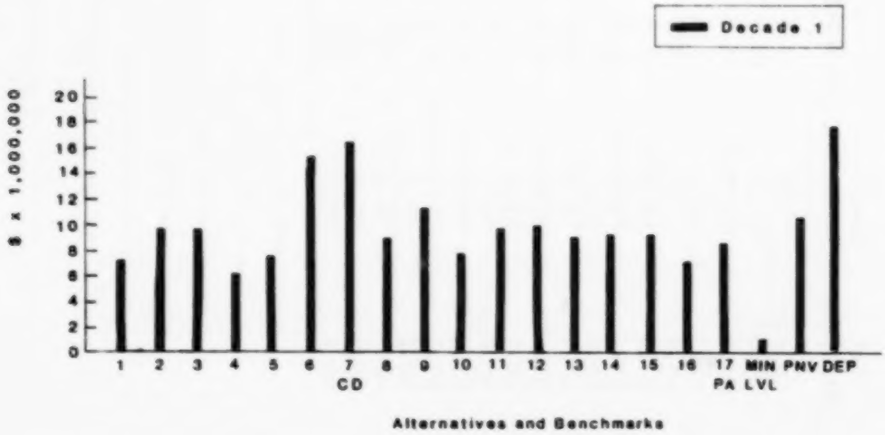

Figure II-17. Estimated Average Annual Returns To The U.S. Treasury

Flathead National Forest

TABLE II-22 Estimated Decade 1 Average Annual Net Returns to the U.S. Treasury With Projections for Decade 5 ($MM) - Flathead National Forest

	DECADE 1				DECADE 5			
Alternative/ Benchmark	Net Receipts	Total Costs	Receipts	Noncash Benefits To Users	Net Receipts	Total Costs	Receipts	Noncash Benefits to Users
Maximum PNV	-2.1	12.9	10.8	7.0	44.2	18.4	62.6	22.4
6	-0.4	15.2	14.8	6.9	38.0	17.7	55.7	23.4
7 CD	0.3	15.3	15.6	6.3	38.8	15.9	54.7	19.7
9	-0.3	11.0	10.7	6.5	35.0	15.1	50.1	19.6
12	-7.9	16.4	8.5	6.9	39.6	16.8	56.4	23.0
13	-7.8	16.2	8.4	6.9	39.0	16.7	55.7	22.7
14	-7.6	16.0	8.4	6.9	38.3	16.4	54.7	22.7
10	-6.0	12.9	6.9	6.8	36.8	13.9	50.7	20.0
11	-8.1	16.5	8.4	6.9	36.1	16.8	52.9	22.6
15	-7.2	15.6	8.4	6.9	37.7	16.0	53.7	22.2
2	-8.0	17.2	9.2	6.9	40.4	18.0	58.4	22.4
4	-5.2	10.7	5.5	5.9	41.6	17.8	59.4	19.7
8	-8.3	16.8	8.5	6.9	39.2	17.5	56.7	23.4
3	-7.4	16.1	8.7	6.9	35.2	17.1	52.3	23.2
5	-7.2	14.2	7.0	6.9	36.9	15.6	52.5	22.3
17 PA	-8.1	16.2	8.1	7.1	34.6	16.4	51.0	22.1
1	-7.7	14.4	6.7	6.9	34.8	17.9	52.7	22.0
16	-6.6	13.0	6.4	6.7	31.5	13.8	45.3	20.1

3. NONCASH BENEFITS

Noncash benefits are the difference between the potential cash values of resources and the fees actually paid by users of those resources. They are benefits to individual users who are charged no fees or who are charged fees that are less than full economic values. Noncash benefits are relatively constant across alternatives when the entire 150-year planning horizon is considered, varying from about 37 to 43 percent of total discounted benefits. In general, the proportion of economic benefits for which charges are not made increases as the level of timber harvest decreases and other resource goals are emphasized. Table II-18 displays the present value of income transfer benefits. The values are listed under "Present Value Benefits without Returns to U.S. Government" in that table. Table II-22 displays the average annual noncash benefits for Decades 1 and 5.

Payments made to counties in lieu of taxes are another kind of income transfers. Those transfers are discussed under Community Effects in this chapter.

4. BUDGET AND WORK FORCE

Average annual first Decade budget, operations, and maintenance plus capital investments are displayed by alternative in Figure II-18. The annual costs by the major cost groups for Decades 1-5, 10, and 15 are displayed in Table II-18.

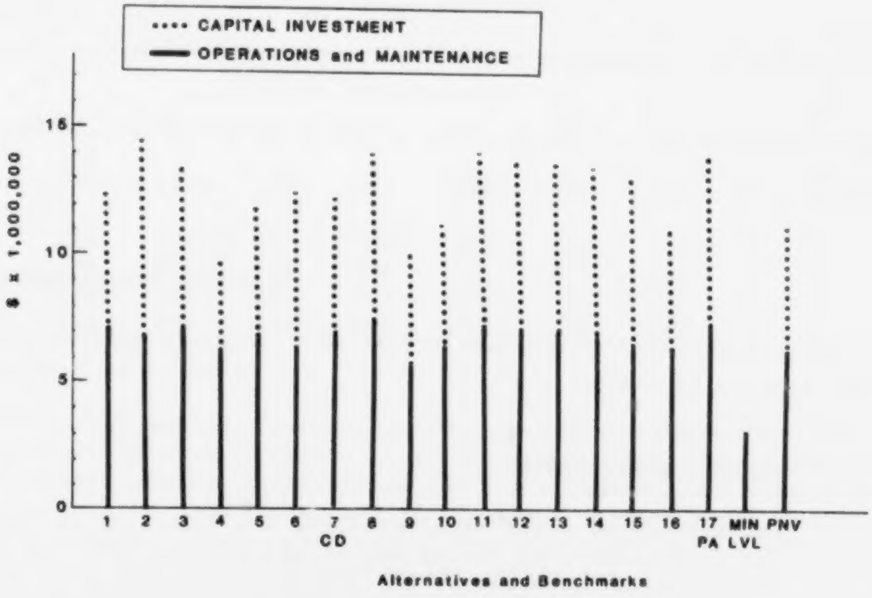

Figure II-18. Average Annual First Decade Budget Operations and Maintenance Plus Capital Investments

Flathead National Forest

Twenty-five percent of the costs in all alternatives are for activities which are not significantly influenced by the objectives of the alternatives (overhead costs). These costs vary from $3.0 to $3.3 million/year and include general administration, fire control, law enforcement, planning and inventory, firewood administration, human resource programs, nursey management, and other programs. The other 75 percent of the costs are for resource management activities which are determined by the objectives of the alternatives.

Table II-23 displays the Forest Service work force required for each alternative. Alternatives with the larger timber harvest levels would require a greater work force.

TABLE II-23 Projected Forest Service Work Force in Person Years - Flathead National Forest

		Alternative									
		1	2	3	4	5	6	7 CD	8	9	10
Decade	1	455	479	466	368	440	464	448	474	379	418
	2	435	472	448	406	440	482	484	455	440	416
	3	468	495	472	477	463	484	487	477	425	445
	4	480	503	485	490	481	502	509	487	438	470
	5	490	486	472	484	461	484	464	482	456	436

		Alternative								
		11	12	13	14	15	16	17 PA	PNV	MIN LVL
Decade	1	472	471	468	466	461	419	468	418	100
	2	445	445	440	439	435	400	435	438	80
	3	468	470	467	461	457	428	461	476	80
	4	483	481	478	475	470	440	479	475	80
	5	475	475	475	471	466	435	471	488	80

1980 Work Force = 470

5. PRESENT VALUE COSTS

The discounted costs by alternative are displayed in Figure II-19. The discounted cost is the sum of all expenditures for 150 years discounted at 4 percent. The minimum discounted cost from Federal ownership of the Forest is $73 million as defined by the Minimum Level Benchmark. The maximum discounted cost is $456 million for Alternative 2. Total costs decrease in all alternatives after Decade 6 because most of the roads are constructed. Figure II-19 shows that discounted costs vary between $331 million and $456 million for all the alternatives.

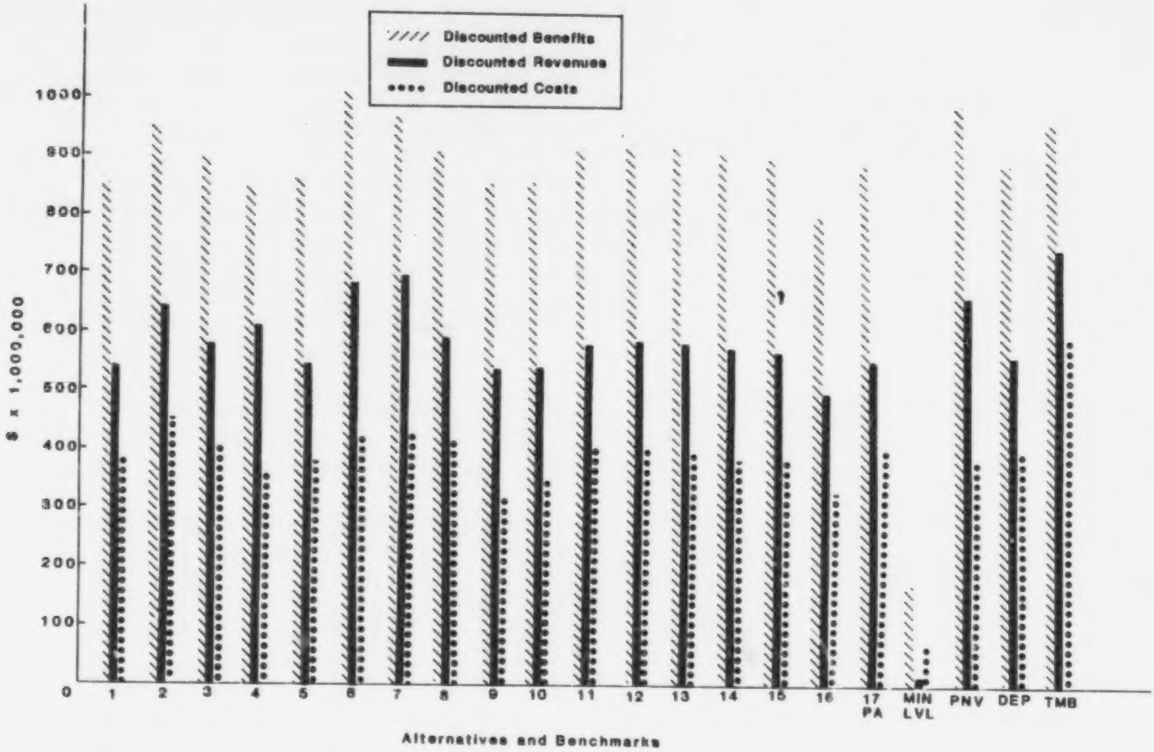

Figure II-19. Present Value Benefits, Costs, and Revenues.
Flathead National Forest

6. ANNUAL PRICED BENEFITS

This section describes the values associated with outputs that can be measured in dollars.

The average annual economic benefits for Decade 1 are displayed in Figure II-20 by alternative by two resource categories: market and nonmarket. Market benefits are the sum of the dollar returns to the U.S. Treasury from timber sales, livestock grazing fees, campground fees, mineral leases, and special use fees, plus values assigned to livestock grazing and developed recreation use. Nonmarket benefits are the dollar values assigned to dispersed, wilderness, and wildlife related recreation use. The benefits for range and recreation include actual dollar receipts plus additional assigned values.

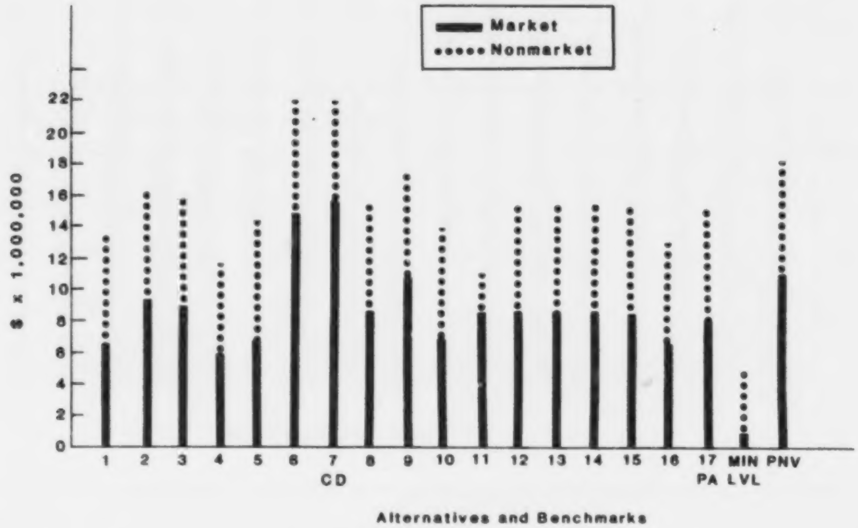

Figure II-20. First Decade Average Annual Benefits Market Plus Nonmarket Values.

Flathead National Forest

The purpose of assigning benefit values to some resources is to display the full value that users are willing to pay for that resource. The annual economic benefits for the resource groups (Decade 1-5, 10, and 15) are displayed in Table II-18. The benefits increase for all alternatives through the planning period as both timber and recreation outputs and unit prices increase.

7. PRESENT VALUE BENEFITS

Present value benefits (discounted priced benefits) are displayed in Figure II-20 by alternative. They are the sum of market and nonmarket values for 150 years discounted at 4 percent. The present value benefits are displayed by two categories: market and nonmarket. Market benefits are the sum of the dollar returns to the U.S. Treasury from timber sales, livestock grazing fees, campground fees, mineral leases, and special use fees. These values are also shown in Figure II-19 under Present Value Revenues, and are listed in Table II-22 under Receipts. Nonmarket benefits are the dollar values assigned to livestock grazing and dispersed, developed, wilderness, and wildlife related recreation use. The benefits for range and recreation include actual dollar receipts plus additional assigned values. These additional values are discussed under Noncash Benefits in this section. The purpose of assigning benefit values to some resources is to display the full value that users are willing to pay for that resource. The annual priced benefits for major resource groups are displayed in Table II-18. The benefits increase for all alternatives through the planning period as both timber and recreation outputs and unit prices increase. Appendix B, Section IV includes a more detailed discussion of priced benefits (market and nonmarket) and outputs that are not measurable in dollar terms (nonpriced benefits). Discounted economic benefits by major resource category are displayed in Tables II-13 and II-21.

The maximum discounted benefits result from managing for maximum present net value as defined by the Maximum PNV Benchmark. Total maximum discounted benefit is $990 million.

Dollar values assigned to market resources contribute from 62 to 71 percent of the discounted benefits in all alternatives. (Over 90 percent of the value of the market resource is attributable to timber.) The primary difference in the total discounted benefit value between alternatives is due to variations in timber harvest levels.

Recreation discounted benefits vary mainly with the amount of wilderness in each alternative. Alternatives with proposed wilderness generally have higher recreation discounted benefits than those alternatives without proposed wilderness. This is because wilderness use is valued higher than recreation use outside wilderness.

E. MAJOR TRADEOFFS AMONG ALTERNATIVES

This section provides additional information in evaluating net public benefits of alternatives. This additional information describes the tradeoffs that would occur among the priced benefits and nonpriced benefits described earlier.

1. NATIONAL, REGIONAL, AND LOCAL DEMAND OUTLOOK

To provide a framework for assessing responses to issues, the long-term resource needs of the nation, region, and local communities are reviewed briefly.

The 1985 Draft EIS for the RPA Program update stated that as population and incomes grew, and economic activity expanded, the consumption or use of nearly all products of forest, range lands, and associated inland waters increased; and in most areas, at rapid rates. It also stated, "demand for most products is likely to continue to rise rapidly in the decades ahead and that supplies will increase although at much slower rates. Further, most of the resource demand and supply projections -- those for water, forage, outdoor recreation and wilderness, and wildlife and fish -- have not changed since 1979."

Demand for timber will continue to grow and, by 2030, be at a level of 25.8 billion cubic feet, up 14.7 billion cubic feet from the current 11.1 billion cubic feet. A downward revision in the demand for housing, however, and an upward revision in base prices for softwood lumber and plywood indicate lower projections in the quantity demanded for softwood lumber. The supplies of timber that will be available to meet these demands show slower increases. Regionally, softwood production in the Douglas-fir subregion remains close to the 1980 level until 1990 when it declines by 13 percent (from 2.3 to 2.0 billion cubic feet) to a level that is maintained without much change until 2030. In contrast, National softwood timber supplies are projected to rise from 4.1 billion cubic feet in 1980 to 7.3 billion cubic feet in 2030 with most of the increase coming in the Southeast region of the U.S. Locally, about 224 million board feet were received by mills in Flathead County in 1981, with 47 percent of that total being supplied by National Forests (Keegan, et al, 1981).

No data is available on total timber supplies in Flathead County over the next 50 years, although a recent study concluded an "equilibrium" supply as the most likely scenario for the next five decades in the State, with stumpage prices remaining relatively stable. This means that in spite of some ownerships cutting at faster rates, their inventories, though greatly diminished, are not cut out during the next 48 years. With general stability in the stumpage price trend (there will always be year-to-year fluctuations due to business cycles), industry can be expected to expand and retool its capacity to handle one-third more volume per year. The State total sawtimber volume, in spite of continued cutting at equilibrium quantities, is increasing in size by 0.3 percent each year, (USDA, 1984, Montana Timber Demand and Supply). Although the local timber industry has suffered losses since 1979, it will continue to be of major economic importance. It may not, however, return to its 1979 level of employment (Keegan, et al. 1981).

Outdoor recreation use on Federal lands is expected to continue to increase. The most significant increases in recreational use are occurring in the Sunbelt and Western States where population growth is most rapid. The bulk of public lands, which provide most of the recreational opportunities for the public, are located some distance from our Nation's most populated areas. The National Forests are expected to provide for the increased recreational use, as private lands for public recreational uses may be limited. Also social uses of fish and wildlife have been rising. For example, hunting licenses have increased by 45 percent and fishing licenses by 49 percent in the last 20 years. These trends are expected to continue.

Reported recreation use of wilderness more than doubled from 1965 to 1980. Demand for recreation use of wilderness will grow each year for the next several decades. Carrying capacity limits will be reached in 30 percent of the National Forest wildernesses by the year 2000 regardless of investments. The Nation has significant wilderness resources with the capability to meet projected use well into the 21st century, if Federal lands considered suitable are added to the National Wilderness Preservation System and if other critical resource uses do not cause designated areas to be declassified. Region 1, which includes Montana, North Dakota, and northern Idaho, has the best opportunity of any Region in the lower 48 states to meet projected wilderness use. Locally, in 1982, 54 percent of the use in the Bob Marshall Wilderness Complex was from Northwest Montana (Lucas, 1984). The Flathead National Forest has a good opportunity to meet projected wilderness use for the next few decades, with approximately 1,070,000 acres classified as wilderness, and 495,430 acres inventoried as roadless.

Nationally, wildlife and fish populations are in trouble in some areas. The U.S. Environmental Protection Agency reports that up to 2 million acres of fish and wildlife habitat will be lost annually between now and the year 2000. Almost half of the acreage of wetlands in the lower 48 states is gone, and 80 percent of the hardwood bottomland along the lower Mississippi River is seriously impacted. Those species dependent upon mature timber, wetlands, and riparian areas will continue to decline nationally as their special habitats become less available. The local wildlife and fish populations will fare better than what national trends indicate as some key habitats are protected by the State, U.S. Park Service, or Forest Service through special regulations (e.g., waterfowl are protected on the north shores of Flathead Lake, bull trout spawning streams are closed to fishing, and critical grizzly bear habitat on Federal lands is managed for their recovery). Still, the future of wildlife and fish populations will be dependent on the levels of development and protection on their special habitats.

Supplies of some important mineral and energy sources are increasingly difficult to obtain. A large share of our supplies of energy and strategic materials is produced in other countries, and import dependency on imports is increasing. Availability depends on the international political climate and world trade situation. Despite the lack of reserves for a number of minerals, the Nation's resource base is generally extensive. Considerable untapped mineral and energy resources underlie National Forest System lands. In many instances, these resources are in remote areas where development has been impeded by land status, difficult terrain, and climatic conditions. Today, growing demands and higher mineral and energy prices make mining in remote areas more attractive. Part of this region overlies the Overthrust Belt which is considered as having a high potential for supplying energy sources. For the Flathead National Forest, most interest has been in oil and gas leasing, with over 80 percent of the nonwilderness portion of the Forest leased or under lease application. All leases were suspended in 1985 due to the Conner vs. U.S. Court Decision (see Chapter IV). Locatable mineral potential is generally low. Currently, little activity exists on the Forest for locatable minerals with relatively few valid claims and no active claims.

2. ECONOMIC VALUES AND RESPONSES TO MAJOR ISSUES, CONCERNS, AND RESOURCE USE/DEVELOPMENT OPPORTUNITIES

National Forest Management Act of 1976, requires the Forest Service to prepare National Forest Plans and display the effects of implementing that Plan, or any of the alternatives, on the environment. In choosing the Preferred Alternative, the Forest must decide which alternative maximizes net public benefits. The key in evaluating these alternatives is an understanding of the public issues and management concerns, and how well the alternatives resolve these issues and concerns. The issues and concerns cover many areas, and involve outputs and effects which are tangible or measureable (such as amount of board feet or budget amounts) and other outputs and effects which are more difficult to measure (such as community stability and elk hunting quality). Chapter I and Appendix A discuss further the development and identification of the issues and concerns.

Listed below are the major issues and concerns for the Flathead National Forest. Below each issue or concern are the best measures that were used to evaluate the responsiveness of the alternatives to the issue.

a. The level of timber harvest while recognizing basic land productivity, economics, community stability, insect and disease concerns, and other resource needs.

   - First and fifth decade harvest.
   - First decade lodgepole pine harvest.
   - Long-term sustained yield.
   - Suitable acres.

b. Amount of nonwilderness dispersed recreation opportunities.

  - Recreation visitor capacity in nonwilderness dispersed roadless recreation.
  - Recreation visitor capacity in nonwilderness dispersed roaded recreation.

c. Quality of habitats and wildlife populations.

  - Population potential of elk in fifth decade.
  - Old-growth potential acres below 5000 feet elevation.

d. Quality of habitats for threatened and endangered species populations.

  - Population potential of grizzly bears.

e. Areas managed as wilderness and roadless areas while meeting other demands.

  - Acres of roadless area.
  - Acres of wilderness.

f. Areas managed for sensitivity to visual quality.

  - Acres of partial retention and retention.

g. Management and construction of roads to best meet resource and public issue needs.

  - Miles of roads to be constructed.
  - Effective open road densities.

h. Contribution of the Forest to the economic development and way of life of nearby communities.

  - Changes in employment.

i. Protection and maintenance of water quality.

  - Riparian area management intensity.
  - Relative Sediment Risk Ranking.
  - Number of catchable trout.

j. In addition, the nation has an interest in the Forest being managed cost efficiently while ensuring the quality of the biological and physical environment is maintained at acceptable levels or enhanced.

  - Net receipts.
  - Budget.
  - PNV.

3. DIFFERENCES AND SIMILARITIES OF INDIVIDUAL ALTERNATIVES

The following table and discussion identify the tradeoffs between monetary goals (Returns to the Treasury and PNV) and addressing the issues. The descriptions of tradeoffs proceed from the alternatives with the highest PNV to the lowest.

In general the amount of wilderness, roadless, wildlife habitat, visual quality, and protected fish habitat acres increase as PNV and the level of timber production decrease.

As more wilderness areas are designated it affects PNV in two ways: 1) the current and LTSY (long range timber harvest) are reduced due to the reduced production base and 2) nontimber multiple-use management costs are reduced to some extent. As the area managed for visual quality increases it also affects PNV in two ways: 1) timber harvest and management costs increase and 2) the amount of volume removed in the first entry is decreased, decreasing benefits. Water quality/fisheries habitat is protected by delaying harvest on low cost timberlands which have had heavy past harvests. This has a significant effect on PNV because in order to maintain a fairly high timber cut the harvest is forced into areas with higher access costs and lower timber values.

In Table II-24 the indicators identified above are used to show the degree of response of each alternative to the issues mentioned above.

The following section discusses the major economic tradeoffs among the alternatives, and issues addressed by each alternative. The alternatives are listed in order of decreasing PNV. For a more detailed discussion of resource constraints see Appendix B, Sections VII and VIII.

TABLE II-24 Quantitative Indicators of Responsiveness of Alternatives to Major Issues and National Concerns (Benchmarks and Alternatives are in order left to right from highest to lowest Present Net Value) - Flathead National Forest

Output/Activity	Benchmark PNV	Alternative 6	7 CD	9	12	13	14	10	11	15
..........Million Dollars..........										
PRESENT NET VALUE	606	578	533	513	505	504	503	502	499	498
NET RECEIPTS 1/										
Decade 1 --------------------->	-2.1	-0.4	0.3	-0.3	-7.9	-7.8	-7.6	-6.0	-8.1	-7.2
5	44.2	38.0	38.8	35.0	39.6	39.0	38.3	36.8	36.1	37.7
NONCASH BENEFITS										
Decade 1 --------------------->	7.0	6.9	6.3	6.5	6.9	6.9	6.9	6.8	6.9	6.9
5	22.4	23.4	19.7	19.6	23.0	22.7	22.7	20.0	22.6	22.2
BUDGET (Avg. Ann. First Decade)	11.1	12.6	12.4	10.1	13.8	13.7	13.5	11.1	14.0	13.2
..........Million Board Feet Per Year..........										
TIMBER HARVEST										
Decade 1 --------------------->	103	145	132	103	100	100	100	80	100	99
5	183	175	161	146	165	164	160	144	157	156
..........Thousand Acres Per Year..........										
LODGEPOLE PINE SAWTIMBER HARVEST (First Decade)	2.2	0.3	0.4	2.0	1.7	1.8	1.8	1.9	1.7	2.0
..........Million Board Feet..........										
LONG-TERM SUSTAINED YIELD	155	186	165	129	164	162	159	142	164	154
..........Thousand Acres..........										
LAND SUITABLE FOR TIMBER MANAGEMENT	723	780	722	578	715	707	687	612	717	671
..........Thousand Recreation Visitor Days Per Year..........										
NONWILDERNESS DISPERSED RECREATION (Roaded & Roadless) Opportunities	1393	1600	1571	1016	1584	1528	1465	1208	1623	1388
..........Wilderness and Nonwilderness Over-Wintering Population..........										
ELK POTENTIAL (Fifth Decade) Maximum - 9807 Elk	5492	5960	6698	4676	7800	7800	7800	7243	7800	7220
..........Bears-Wilderness and Nonwilderness Population..........										
GRIZZLY BEAR POTENTIAL Maximum - 230 to 250 Bears	184	191	190	212	201	202	202	195	201	202
..........Thousand Acres..........										
ROADLESS MANAGEMENT EMPHASIS	299	352	386	97	320	281	279	275	338	243
..........Thousand Acres (Nonwilderness)..........										
POTENTIAL VISUAL QUALITY OBJECTIVES ACHIEVED (Ret. and Partial Ret.)	356	69	329	129	440	385	383	335	458	347
..........Thousand Acres..........										
ADDITIONAL WILDERNESS	0	0	0	495.3	82.4	143.2	196.6	196.7	48.8	260.2
..........Miles..........										
ROADS TO BE CONSTRUCTED	3379	3602	3455	2258	2856	2840	2783	2752	2875	2717
..........Person Years - Change from 1980 Situation..........										
CHANGE IN EMPLOYMENT	89	696	435	73	205	197	196	-207	209	176

1/ Projected Returns to U.S. Government minus Estimated Total Costs

TABLE II-24 (Continued)

Output/Activity	Alternative								Benchmark
	2	4	8	3	5	17(PA)	1	16	MINLVL
	Million Dollars								
PRESENT NET VALUE	495	494	493	490	489	483	477	467	100
NET RECEIPTS 1/									
Decade 1 --------------------->	-8.0	-5.2	-8.3	-7.4	-7.2	-8.1	-7.7	-6.6	-2.2
5	40.4	41.6	39.2	35.2	36.9	34.6	34.8	31.5	0
NONCASH BENEFITS									
Decade 1 --------------------->	6.9	5.9	6.9	6.9	6.9	7.1	6.9	6.7	4.5
5	22.4	19.7	23.4	23.2	22.3	22.1	22.0	20.1	8.7
BUDGET (Avg. Ann. First Decade)	14.5	9.4	14.0	13.5	11.8	13.7	12.4	10.8	3.2
	Million Board Feet Per Year								
TIMBER HARVEST									
Decade 1 --------------------->	116	51	100	101	82	101	82	71	0
5	177	176	166	160	151	152	151	124	0
	Thousand Acres Per Year								
LODGEPOLE PINE SAWTIMBER HARVEST (First Decade)	3.2	0.9	2.0	1.8	2.4	2.0	2.4	1.5	0
	Million Board Feet								
LONG-TERM SUSTAINED YIELD	180	175	165	166	152	149	154	135	0
	Thousand Acres								
LAND SUITABLE FOR TIMBER MANAGEMENT	775	737	720	715	651	671	673	512	0
	Thousand Recreation Visitor Days Per Year								
NONWILDERNESS DISPERSED RECREATION (Roaded & Roadless) Opportunities	1576	1259	1673	1594	1509	1599	1453	1122	789
	Wilderness and Nonwilderness Over-Wintering Population								
ELK POTENTIAL (Fifth Decade) Maximum - 9807 Elk	8694	6902	7800	8380	7697	7800	6524	4900	4041
	Bears-Wilderness and Nonwilderness Population								
GRIZZLY BEAR POTENTIAL Maximum - 230 - 250 Bears	190	152	200	197	195	205	215	216	212
	Thousand Acres								
ROADLESS MANAGEMENT EMPHASIS	394	139	385	429	450	296	321	164	9
	Thousand Acres (Nonwilderness)								
POTENTIAL VISUAL QUALITY OBJECTIVES ACHIEVED (Retention and Partial Retention)	195	195	392	464	321	410	319	275	0
	Acres								
ADDITIONAL WILDERNESS	0	0	0	0	0	98.1	0	373.8	0
	Miles								
ROADS TO BE CONSTRUCTED	3170	3142	2800	2960	2920	2771	2942	2526	0
	Person Years - Change from 1980 Situation								
CHANGE IN EMPLOYMENT	498	-707	213	-60	-138	201	-68	-344	-1932

1/ Projected Returns to U.S. Government minus Estimated Total Costs

PNV BENCHMARK

a. Analysis of Constraints

The PNV Benchmark identifies the maximum PNV of the Forest at $605.5 million. A harvest volume of 103 MMBF/year, in Decade 1, was achieved while meeting minimum management requirements and allowing timber volumes to fluctuate 20 percent from one decade to another. In absence of competing goals of other resources, timber harvest occurs on the most cost-efficient lands. All productive roadless areas are available for timber harvest subject to achieving maximum PNV. A total of 723,130 acres are managed for timber production out of 835,747 acres that are tentatively suitable. Thus, with relatively low noncommodity resource goals, 87 percent of the tentatively suitable timber base can be efficiently managed for timber production.

b. Net Public Benefits

The PNV Benchmark would represent significant tradeoffs of nonpriced public benefits compared to the existing situation. Major issues where significant tradeoffs would be made to maximize priced benefits include nonwilderness roadless recreation, various wildlife and fish habitat, visual quality, and response to public issues affecting lifestyles in nearby communities.

Overall priced benefits exceed costs in all decades, however, cash receipts are less than total costs in Decade 1. The reason for this is that approximately half of total priced benefits are noncash wilderness and nonwilderness recreation (including hunting and fishing) benefits for which no cash is actually paid to the U.S. Treasury. The costs to provide these noncash benefits along with nonpriced benefits, plus capital investment costs (primarily road costs) necessary to maximize present net value of priced benefits, results in a negative Decade 1 cash flow. All alternatives formulated using the maximum PNV objective function in FORPLAN will exhibit the same cash receipts pattern of the PNV Benchmark. Changing constraints (and as a result costs and benefits) will change the quantities of cash flow between alternatives.

Cash flow to the treasury becomes positive in Decade 2 and increases to the Decade 5 level as a result of decreasing road construction cost and increased timber outputs and values in excess of increased nonpriced benefit costs in each decade.

ALTERNATIVE 6

The goal of this alternative is to maximize the PNV (present net value) of the Forest while achieving high commodity resource production levels for all resource uses and products from the Forest. Resources would be managed as intensively as possible.

a. Analysis of Constraints

PNV = $577,700,000
Change from PNV Benchmark = $27,800,000
Discounted Cost = $436,600,000

The PNV generated by this alternative is $577.7 MM (million dollars); $27.8 MM less than the Maximum PNV Benchmark and the highest of all alternatives. Timber levels are the highest of any of the alternatives.

Timber harvest levels eventually reach 175 MMBF. The long-term sustained yield capacity of 186 MMBF is produced on 779,706 suitable acres.

PNV was decreased by requiring timber harvest volume in the first decade to be at least 140 MMBF. Because the real stumpage values increase over time more rapidly than the 4 percent discount rate, deferment of harvest is more cost efficient than immediate harvest. The use of the nondeclining yield constraint also reduces the PNV when compared to the Maximum PNV Benchmark.

This alternative has the third highest discounted costs. Achieving a high level of commodity development required a high level of funding in timber and road activities.

Management cost for nonpriced resources are increased compared to the PNV Benchmark as a result of more of the Forest assigned to multiple-use prescriptions for nonpriced benefit production.

b. Net Public Benefits

This alternative meets the direction in the President's "Statement of Policy" which states that "at least one alternative in the DEIS will be developed to determine how the 1980 RPA (Forest and Rangeland Renewable Resources Planning Act) program could best be implemented on the Forest. National demand for Forest resources are reflected in the RPA output objectives assigned to the Forest through the Northern Regional Guide."

This alternative exceeds the RPA timber program in all decades. Permitted livestock grazing, although highest of all the alternatives, does not achieve RPA grazing objectives beyond the first decade. The Forest does not have the capability to achieve the fifth decade RPA grazing use target. RPA objectives for dispersed and developed recreation are exceeded by this and all other alternatives.

Under Alternative 6, suitable lands would be accessed beyond the economically optimal amount in order to achieve high timber output objectives resulting in a tradeoff of PNV. This would increase opportunities for employment in the timber and support industries. Tradeoffs to achieve this high level of priced benefits include big-game winter range, fisheries, visual quality, and roadless recreation quality as well as PNV, resulting from increased costs.

Under Alternative 6, existing relationships to the Forest would be significantly altered in major public issue areas. Only nonproductive lands would be managed to provide roadless recreation opportunities, the designation being based on economic criteria rather than evaluation of recreation quality. Although noncash benefits appear relatively high, they are produced primarily by roaded recreation. A major public issue of quality of recreation as indicated by preservation of local inventoried roadless areas would not be responded to.

Roadless dispersed recreation opportunities in this alternative are provided on lands not suitable for timber production. This does not allow for recreation management of high quality recreational settings in the potentially suitable land base. Wilderness management is intensified to increase the wilderness recreation benefits. No new wilderness is recommended. The road management program provides for one of the highest levels of road access, more than doubling the current levels of access to the Forest.

Changes in the Forest landscape would be most noticeable of all the alternatives. This alternative has the largest suitable land base and the fewest constraints on timber harvest designed to maintain visual quality. Only 14 percent of the Forest's potential visual quality objectives would be met.

Big-game population potentials are fourth lowest of all the alternatives as winter ranges are managed for timber production, not to meet big game-management objectives.

Alternative 6 would provide habitat potential for approximately 191 bears substantially below the 207 target provided by the Northern Regional Guide. There is a tradeoff of PNV for the higher grizzly potential compared to the PNV Benchmark.

Economic stability under Alternative 6 would be adversely affected by the disproportionate emphasis on timber production. Higher timber harvest volumes could create more employment opportunities in the wood products industry. The comparatively low production levels of some other resources, particularly big game, however, would make the wood products industry even more important than it is today, resulting in a potentially more unstable economy. The increased emphasis on priced benefit production could have adverse effects on recreation, tourism, real estate, or other sectors of the economy that benefit from nonpriced resource production.

ALTERNATIVE 7 (CURRENT DIRECTION)

The goal of this alternative is to continue current management direction as it is defined by the Ranger District Multiple-Use Plans and the Unit Plans developed for portions of the Forest. This alternative (also referred to as Alternative 7) represents the "no action" alternative.

a. Analysis of Constraints

PNV = $532,700,000
Change from PNV Benchmark = $72,800,000
Discounted Cost = $438,900,000

This alternative achieves a PNV of $532.7 MM.

Current Direction trades off almost 73 million dollars in PNV in order to produce higher outputs of nonpriced and noncash benefits when compared to the PNV Benchmark. The mix of land designations and funding levels associated with existing management direction are not guided by economic efficiency criteria. A good portion of the PNV tradeoff is related to the inflexibility of conforming to existing management direction land use and timber management goals. Compared with other alternatives, the PNV of Current Direction is high because timber harvest is scheduled on ground with relatively low production and reforestation costs in relation to the timber values in early decades.

The total discounted costs for this alternative are relatively high. Logging, timber, and road costs are high for this alternative in order to support timber harvest objectives above the economically optimal amount. The high timber output and heavy investment in timber management results in a tradeoff of PNV compared to the PNV Benchmark. Alternative 7 is the only alternative to show a positive flow of cash receipts to the U.S. Treasury in Decade 1, as a result of relatively low nonpriced benefit management costs and concentrating timber harvest in low cost areas.

b. Net Public Benefits

Timber is emphasized in this alternative, at least in the early decades' volumes. First decade average annual harvest is 132 MMBF. The long-term sustained yield is 165 MMBF. Current direction continues timber harvest on slopes less than 40 percent in early decades. This results in adverse impacts on nonpriced resources, and lower logging and management costs than other alternatives.

Current Direction would continue a high emphasis on priced benefits. A tradeoff in the quality of big-game hunting would occur over time. The high level of roading needed for management would be located throughout the Forest providing relatively unrestricted motorized access. By the fifth decade, few unroaded areas would remain and access during hunting season would have increased. The potential elk, mule deer, and whitetailed deer populations in the first and second decades are relatively high because timber harvest sustains high levels of forage production. By the fifth decade, however, management designed to increase forage production on only 50 to 60 percent of the potential winter ranges would result in populations lower than needed to be responsive to wildlife public issues. The variety of environmental settings would be reduced over time, with hunting outside wilderness generally occurring in a roaded environment. Production of all wildlife resources are improved in relation to the PNV Benchmark which results in a tradeoff of PNV.

Although total acreage managed to provide dispersed recreation opportunities is high, low funding levels and the lack of consistent direction limit the quality of the dispersed recreation. Roadless dispersed recreation capacity potential is relatively low. Noncash recreational benefits are relatively low. They are produced primarily in the roaded natural-appearing opportunity class. Few primitive roadless recreation areas are provided. The productive lands in the north end, the Swan Range, Glacier Slough, and the Spotted Bear River would be accessed and managed for timber. Lands actually designated as roadless dispersed recreation would not be in high quality settings, nor would there be a variety of settings.

Current direction limits potential capacity of the wildernesses due to low levels of funding for management. No new wilderness is recommended.

Water quality risk would rank high in the first decade, because of continued harvesting in valley bottoms at a high rate.

Although Current Direction meets a relatively high percentage of the Forest's potential visual quality objectives at a cost to PNV, the management objectives and land designations do not assure that the visual quality of highly critical public issue areas such as Noisy Face are protected. The visual quality of the Forest would be modified.

Current Direction generally would tradeoff nongame species habitats in favor of higher priced benefits. The acres contributing old-growth habitat would be low. No areas would be managed specifically to improve or maintain nongame species habitat.

Current Direction would provide improved grizzly bear habitat relative to the PNV Benchmark, but the potential is still well below the 207 bear target.

Current Direction would generally maintain the existing level of economic stability over the short term; however, over time, increases in timber production levels and reductions in the quality and amount of recreation and hunting opportunities would slightly degrade local economic stability because more emphasis would be placed on a single industry.

Existing relationships to the Forest would be maintained for the first decade but would be changed by the second and third decades. Motorized access to the Forest would increase over time, affording local residents more opportunities to gather firewood and pursue motorized recreational activities. Unroaded environments would be reduced.

ALTERNATIVE 9

This alternative has resource objectives designed to maximize the wilderness resource, and to provide the greatest amount of revenue for the least cost on nonwilderness lands. Commodity resources management is guided primarily by economic criteria. Management for resources that do not produce priced benefits outside wilderness is minimal.

a. Analysis of Constraints

PNV = $512,900,000
Change from PNV Benchmark = $92,600,000
Discounted Cost = $331,100,000

Alternative 9 has a PNV of $512.9 MM, the third highest of the 17 alternatives.

Alternative 9 reduces PNV 92.6 million dollars due to 495,000 acres of currently nonwilderness lands being added to the National Wilderness Preservation System. The only change between the PNV Benchmark and Alternative 9 is the assignment of the current roadless inventory to wilderness management. Almost 90 percent of the opportunity cost is due to reduced timber harvest benefits the rest due to reduced non-cash priced benefits resulting from reduced recreation capacity below projected demand. Although both PNV Benchmark and Alternative 9 have identical constraints including 80 percent of current timber harvest floor, the maximum wilderness alternative cannot achieve the timber returns of the PNV Benchmark due to the 145,000 acre reduction in the suitable landbase. The change in suitable acres is not equal to the total potentially suitable acres in the roadless inventory because many of those potentially suitable roadless acres were economically unsuitable in the PNV Benchmark.

Alternative 9 has the lowest discounted costs of all the alternatives. With all roadless lands designated as wilderness, capital investment is low and multiple-use management costs for nonpriced benefits such as wildlife and fish habitat improvement, water quality, and recreation opportunities are minimized. The remaining land is managed as cost efficiently as possible for timber and other priced commodities. Non-cash benefits are among the lowest of all alternatives due to the reduced recreational capacity.

b. Net Public Benefits

The average annual programmed harvest of timber for the first decade is 103 MMBF, and peaks at 146 MMBF in Decade 5. The long-term sustained yield capacity of 129.2 MMBF is lowest of all alternatives resulting in significant loss in PNV over the last 10-13 decades. Timber benefits and costs are not greatly affected in Decades 1 and 2. This, in concert with low budget costs for nontimber resources, produces a relatively high PNV.

Under this Alternative, big-game hunting quality would change slightly from the existing situation. Elk and deer populations would be low by the third and fourth decades due to less forage being available. This would result in lower hunter success. Wilderness would provide a high level of security for big-game animals. Most hunting would take place in a primitive setting.

Investment of funds for management of roadless dispersed recreation occurs primarily in those areas which are not capable of timber management and less than 5,000 acres in size. Alternative 9 adds 495,000 acres to the existing National Wilderness Preservation System. Over 67 percent of the Forest would be classified as wilderness, the most of any alternative. All existing contiguous roadless areas of 5,000 acres or more are designated wilderness. Recreation opportunities would consist primarily of primitive dispersed in wilderness areas, and roaded natural-appearing in nonwilderness. Semiprimitive motorized and nonmotorized opportunities would be limited. Management costs for nonpriced and noncash benefit production are low which contributes to a relatively high PNV.

All areas of high quality primitive recreation would be recommended for wilderness; however, a wide range of settings would not be provided in this alternative. Primitive recreation settings, both of high and low quality, would be maximized at the expense of existing semiprimitive motorized and semiprimitive nonmotorized settings. Alternative 9 managed all 1,565,300 acres of wilderness at high intensity and provides an estimate of the maximum amount of wilderness recreation the Forest could provide. Wilderness recreation capacity is 468 MRVD's/year, 58 percent of the projected Decade 5 use of 80 MRVD's/year. Roadless dispersed recreation capacity is 72 MRVD's/year, 20 percent of Decade 5 use projected to be 368 MRVD's/year. Roaded natural-appearing capacity of 944 MRVD's/year, is 77 percent of the 1233 MRVD's/year projected Decade 5 need.

Little active management for wildlife habitat of any species would be provided. Grizzly bear potential habitat to support 212 bears is third highest of the 17 alternatives due to the security provided by the large proportion of the Forest managed as wilderness.

Under Alternative 9, the quality of grizzly bear and gray wolf habitat would increase due to the increase in security. The recovery population for grizzly bears would be met.

There would be increased risk of negative water quality impacts due to supporting first decade harvest at comparable levels with a reduced timber land base.

Areas with sensitive visual quality objectives within proposed wilderness areas would be preserved. Visual quality is not emphasized because maintenance of a pleasing landscape increases management costs. Similarly, other constraints and land uses which increase costs and reduce timber revenues such as big-game winter range, grizzly habitat, and amenity values are minimized in the remaining nonwilderness portion of the Forest, thus reducing costs and contributing toward positive PNV.

Oil and gas exploration and development in nonwilderness areas under this alternative is less restricted than under other alternatives.

Employment opportunities would be maintained for this alternative; however, no growth in the timber industry would occur as future supplies of timber would not increase. Employment associated with wilderness recreation would be the highest of any alternative.

Local resident access to the Forest would be the lowest of any alternative, as would firewood gathering opportunities. This alternative would significantly impact existing land use patterns and lifestyles.

Alternative 9 would make the maximum contribution possible for the Flathead National Forest, by adding 495,000 acres to the existing National Wilderness Preservation System. It would maintain existing commodity outputs near current levels, but future potential to provide commodity and certain noncommodity resources such as semiprimitive dispersed recreation is constrained compared to other alternatives.

Areas of both high and low quality for natural integrity, natural appearance, and opportunities for solitude would be included.

ALTERNATIVE 12

The goal of Alternative 12 is to provide a level of timber harvest to local mills that is consistent with recent harvest levels while at the same time responding to the growing recreational use of the Flathead area. Alternative 12 includes a recommended wilderness addition to the Bob Marshall which consists of a Swan Front addition similar to that proposed by the Montana Wilderness Association (approximately 84,400 acres).

a. Analysis of Constraints

PNV = $505,300,000
Change from PNV Benchmark = $100,200,000
Discounted Cost = $411,300,000

The PNV generated by this alternative is 505.3 MM (million dollars); $100.2 MM less than the Maximum PNV Benchmark, highest of all alternatives.

Timber harvest levels of 100 MMBF/year in Decade 1 eventually reach 165 MMBF by Decade 5. The long-term sustained yield capacity of 164 MMBF is produced on 714,699 suitable acres.

PNV was decreased $7.6 MM compared to Alternative 9 primarily due to increased nontimber budget costs. The additional $7.6 million dollar reduction in PNV from Alternative 9 is a result of increased costs for meeting higher levels of dispersed recreation use on nonwilderness lands, increased visual landscape management, higher levels of big game and fisheries habitat improvement, grizzly bear habitat improvement, and increased capital investment in Decades 1-4 for roads in order to reduce environmental effects of harvesting on steep lands. PNV is maximized by concentrating harvest on gentle slopes in early decades and delaying high cost logging areas until later decades. PNV decreases when constraints are used which schedule harvesting on steep slopes in early decades. The nonpriced benefits of such constraints are: better diversity and distribution of wildlife habitat and vegetation, improved visual and recreation quality, reduced risk of adverse water quality effects, and better opportunity to distribute harvests in regenerated stands. In addition to increased costs for multiple-use objectives such as recreation, visual quality, and wildlife habitat, constraints on economic harvest of timber are necessary for their achievement, and this decreases PNV.

The use of the nondeclining yield constraint also reduces the PNV compared to Alternative 9.

b. Net Public Benefits

Alternative 12 would generally maintain the existing quality of big-game hunting over time. Big-game potential reaches 80 percent of maximum potential by Decade 5. Higher wildlife outputs results in a tradeoff of PNV.

A high level of roaded and roadless dispersed recreation opportunities would be provided throughout the Forest. Alternative 12, however, would limit the semiprimitive recreation opportunities as more land in the Swan Range is classified as wilderness. The north end of Glacier View District would be managed to improve grizzly bear habitat in this alternative. The other existing high value roadless areas would be managed to provide a spectrum of roadless recreation opportunities. These areas include the Swan Crest, Deadhorse, Coal Ridge, Standard Peak, Le Beau, and high value areas in the Middle Fork and South Fork. Noncash benefits are high and major public issue roadless areas are protected by wilderness or nonwilderness roadless designation.

Alternative 12 would meet the intent of the Grizzly Bear Recovery Plan.

Under Alternative 12, the visual quality of the Forest would be improved over the existing situation. Potential visual quality objectives are met in highly critical areas and important recreational areas.

Nongame species habitat is protected and moderately enhanced in Alternative 12. The percentage of Forest lands contributing old growth and snag cavity habitat is moderate in comparison to other alternatives. Other types of habitat to support all nongame species would exist at moderate levels by the end of the fifth decade. Some areas would be managed specifically for nongame species.

Economic stability would be provided by this alternative. Economic growth would be slow but distributed throughout important industrial sectors. Decade 1 timber harvest is consistent with the past 15-year average annual harvest rate. The timber harvest schedule would provide 85 percent of the Decade 1 RPA target and 99 percent of the Decade 5 target.

Alternative 12 would provide good opportunities to maintain existing land use patterns and lifestyles. Local residents could access the Forest, while access restrictions would be sufficient for resource protection. Most roadless environments would be maintained.

Alternative 12 would add to nonrecreation wilderness values by increased acres recommended for wilderness classification in the Swan Range between Sixmile Mountain and Inspiration Point.

ALTERNATIVE 13

The goal of Alternative 13 is to provide a level of timber harvest to local mills that is consistent with recent harvest levels while at the same time responding to the growing recreational use of the Flathead area. Alternative 13 has an additional objective of adding substantial wilderness close to population centers.

The recommended wilderness addition includes the Swan Front and Swan Crest with boundaries very similar to those proposed by the Montana Wilderness Association for a total of approximately 143,200 acres of new wilderness.

a. Analysis of Constraints

PNV = $504,400,000
Change from PNV Benchmark = $101,100,000
Discounted Cost = $405,900,000

Timber harvest levels of 100 MMBF/year in Decade 1 eventually reach 164 MMBF by Decade 5. The long-term sustained yield capacity of 162 MMBF is produced on 707,344 suitable acres.

The PNV of this alternative is $504.4, 101.1 million dollars less than the PNV Benchmark. An additional $900,000 reduction of PNV from Alternative 12 is primarily due to the reduction in recreation carrying capacity and recreation PNV by adding approximately 60,000 acres of the Swan Crest to wilderness. Even though wilderness RVD's are valued higher than roadless dispersed RVD's and wilderness management costs are lower than multiple-use dispersed recreation, the change in capacity from a nonwilderness dispersed recreation to wilderness results in lower PNV.

The timber harvest constraints are identical to Alternative 12. The timber schedule and resulting contribution to PNV is little changed from Alternative 12 due to the relatively small change in the suitable land base and lack of early timber harvest in areas added to recommended wilderness. The one percent reduction in the suitable timber base compared to Alternative 12 would contribute to a small reduction in PNV. The PNV reduction represents the priced benefits traded off in return for the additional nonpriced benefits associated with additional wilderness. Even with lower management costs associated with additional wilderness, the change in the flow of priced benefits, both cash and noncash, more than offsets the cost savings and reduces PNV.

b. Net Public Benefits

Alternative 13 would recommend 29 percent of the existing roadless areas to wilderness while maintaining timber harvest near present levels.

All types of recreation opportunities are emphasized subject to the wilderness objectives. The wildernesses and the Flathead Wild and Scenic River would be managed with higher levels of investment in trail maintenance, access sites, trailhead facilities, and visitor information. Alternative 13 adds the highest quality area to the existing Bob Marshall-Great Bear-Scapegoat Wilderness Complex (Swan Front) and the highest quality area close to population centers (Swan Crest).

Recreation opportunities and potential recreation capacity for the Swan Crest area would change significantly from the current situation. Roadless dispersed recreation capacity for the Forest is 242 thousand RVD's/year, 66 percent of the 368 MRVD's/year use projected by Decade 5. A large proportion of areas designated as roadless dispersed recreation and wilderness management are not capable of timber production. Therefore, potential competition between providing wilderness and recreation opportunities and timber volume are minimized.

Alternative 13 would provide reduced opportunities to maintain existing land use patterns and lifestyles. Traditional access by local residents for motorized recreation in the Swan Crest area would be restricted. Access restrictions would be sufficient for resource protection. High value roadless environments would be maintained or preserved.

This alternative would provide potential elk, mule deer, and whitetailed deer habitat at the same level as Alternative 12. Future forage potential is somewhat reduced. The Trail Creek Grizzly Bear Management Area of 61,000 acres would also be featured in this alternative. A slight gain over Alternative 12 in grizzly bear habitat potential is 202 grizzly bears is due to the reduced human activities projected for the Swan Crest area under wilderness management objectives thus providing greater security.

Alternative 13 would generally maintain the existing quality of big-game hunting over time. Effects on quality would be the same as in Alternative 12. Big-game potential reaches 80 percent of maximum potential by Decade 5.

Alternative 13 would meet the intent of the Grizzly Bear Recovery Plan. This alternative has a similar overall effect on the grizzly as Alternative 11. A slight improvement in the grizzly bear potential index reflects a projected reduction in human activities in the Swan Crest area as a result of wilderness designation.

Nongame species habitat is protected and moderately enhanced in Alternative 13. The percentage of Forest lands contributing old growth and snag cavity habitat is moderate in comparison to other alternatives. Other types of habitat to support all nongame species would exist at moderate levels by the end of the fifth decade. Some areas would be managed specifically for nongame species. Examples include riparian areas and areas such as in Canyon Creek on the Glacier View District.

Under Alternative 13, the visual quality of the Forest would be improved over the existing situation. Potential visual quality objectives are met in highly critical areas and important recreational areas. These areas would be similar to those protected in Alternative 12.

The first decade timber harvest level is 100 MMBF/year, increasing by the fifth decade to 164 MMBF/year. The long-term sustained yield capacity (162 MMBF/year) is slightly less than Current Direction (165 MMBF/year). Decade 1 timber harvest is consistent with the past 15 years average annual harvest rate. The timber harvest schedule would provide 85 percent of the Decade 1 RPA target and 98 percent of the Decade 5 target.

Economic stability would be provided by this alternative. Economic growth would be slow but distributed throughout important industrial sectors. The potential future growth would be slightly less than Alternative 12 due to the reduction in the suitable timber base.

Alternative 13 would add to nonpriced wilderness values over Alternative 12 by increased acres recommended for classification in the Swan Crest from Sixmile Mountain to Columbia Mountain.

ALTERNATIVE 14

The goal of Alternative 14 is to provide a level of timber harvest to local mills that is consistent with recent harvest levels while at the same time responding to the growing recreational use of the Flathead area. Alternative 14 has an additional objective of adding a significant amount of wilderness while maintaining or increasing commodity and other outputs on the nonwilderness portion of the Forest.

The recommended wilderness additions resulting from the objectives closely approximates the areas recommended by the Montana Wilderness Association's "Alternative W". These areas consist of the best wilderness attributes in the Swan Range (Swan Front and Swan Crest) and the north end of Glacier View District for a total of approximately 196,600 acres of new wilderness. Commodity and noncommodity objectives remain the same as Alternative 8.

a. Analysis of Constraints

PNV = $503,000,000
Change from PNV Benchmark = $102,500,000
Discounted Cost = $399,400,000

The PNV achieved by Alternative 14 is $503.0 MM, 102.5 million dollars less than the PNV Benchmark. The additional 1.4 million dollar reduction in PNV from Alternative 13 is due to additional suitable timberland going to wilderness resulting in reduced timber benefits over the planning horizon. The timber harvest schedule and resulting contribution to PNV is little changed from Alternative 13 because the additions to the wilderness had no harvest scheduled in Decade 1, and very limited future harvests scheduled in grizzly bear habitat which is wilderness in this alternative.

Noncash priced benefits are not changed compared to Alternative 13 because the additional wilderness in the north end of Glacier View Ranger District has a recreational carrying capacity similar to the grizzly habitat projected in Alternative 13.

b. Net Public Benefits

Alternative 14 would recommend 40 percent of the existing roadless areas to wilderness while maintaining commodity and other outputs on the nonwilderness portion of the Forest. The recommended wilderness additions resulting from the objectives closely approximates the areas recommended by the Montana Wilderness Association's "Alternative W". These areas consist of the best wilderness attributes in the Swan Range (Swan Front and Swan Crest) and the north end of Glacier View Ranger District for a total of approximately 196,600 acres of new wilderness.

Alternative 14 would add to recreation wilderness values over Alternative 13 by increased acres recommended for classification in the Mt. Hefty, Tuchuck, and in the Thompson Seton roadless areas.

The north end of Glacier View Ranger District would be managed as wildernesss in this alternative. The other existing high value roadless areas would be managed to provide a spectrum of roadless recreation opportunities. These areas include the Deadhorse, Coal Ridge, Standard Peak, Le Beau, and high value areas in the Middle Fork and South Fork.

All types of recreation opportunities are emphasized subject to meeting wilderness and commodity objectives. Hunting opportunities would be changed from the existing situation, due to the amount of the Forest with restricted motorized access. Since there is a limited land base suitable for providing semiprimitive roadless dispersed recreation opportunities, the change in recreation opportunities and potentials due to adding significant wilderness cannot be mitigated. Alternative 14 provides a roadless dispersed potential of 240 MRVD's/year, 65 percent of Decade 5 projected use. Wilderness capacity of 379 MRVD's/year is 47 percent of projected Decade 5 use.

Alternative 14 would provide reduced opportunities to maintain existing land use patterns and lifestyles. Local residents traditional access to the Swan Crest area would be restricted to primitive means as in Alternative 13. High value roadless environments would be maintained or preserved.

This alternative would provide potential elk, mule deer, and whitetailed deer habitat at 80 percent of maximum potential. Because very little critical winter range is within areas recommended in significant wilderness additions, big-game winter range forage can be mostly mitigated. Future forage potential is somewhat reduced. Potential grizzly habitat for 202 bears is similar to Alternative 13. The proposed Trail Creek Grizzly Bear Management Area in Alternatives 11-13, would be replaced by wilderness management in this alternative. About 32,000 acres of the Forest would be managed to improve grizzly bear habitat.

Under Alternative 14, the visual quality of the Forest would be improved over the existing situation. Potential visual quality objectives are met in highly critical areas and in important recreational areas. These areas are similar to those in Alternative 13.

Nongame species habitat is protected and moderately enhanced in Alternative 14. The percentage of Forest lands contributing old growth and snag cavity habitat increases significantly over Alternative 13 due to the amount of potentially suitable timberland recommended for wilderness. Other types of habitat to support all nongame species would exist at moderate levels by the end of the fifth decade. Some areas would be managed specifically for nongame species in riparian areas.

Economic stability would be provided by this alternative. Economic growth would be slow and the future potential would be less than Alternative 13 due to the reduced timberbase and reduced recreation opportunities and capacity.

The first decade timber harvest level is 100 MMBF/year, increasing by the fifth decade to 160 MMBF/year. The long-term sustained yield capacity (159 MMBF/year) is slightly less than Current Direction (165 MMBF/year).

Short-term effects on timber of significant wilderness additions can be mitigated. Long-term effects, indicated by the long-term sustained yield capacity, cannot be mitigated at present. Additional mitigation may be possible in the future if practices such as fertilization and use of genetically improved tree stock is proven practical and approved for long-term planning projections.

ALTERNATIVE 10

This alternative has a goal to protect areas where roadless and wildlife values are high. Wilderness will be recommended for pristine roadless areas where wilderness attributes are high and widely recognized. Timber production and resource extraction are concentrated in other portions of the Forest because of the importance of the timber industry in the local economy.

Those areas managed as wilderness are the Swan Front, Swan Crest, and the north end of Glacier View District. These areas correspond to the Montana Wilderness Association's "Alternative W" recommendations of approximately 196,000 acres. In addition, the Le Beau area of the Tally Lake Ranger District and roadless portions of the Spotted Bear Ranger District are managed for primitive recreation, water protection, and wildlife. This alternative provides a large amount of acreage for primitive recreation, old growth, and nongame species habitat. Dispersed recreation objectives for Jewel Basin Hiking Area (included in the Swan Crest) would be replaced by wilderness management objectives providing primitive recreation. Semiprimitive motorized recreation opportunities would be restricted to a few areas.

a. Analysis of Constraints

PNV = $502,200,000
Change from PNV Benchmark = $103,300,000
Discounted Cost = $351,000,000

Alternative 10 achieves a PNV of $502.2 MM, near the midrange of the 17 alternatives.

Alternative 10 has a PNV reduction cost of 103.3 million dollars compared to the PNV Benchmark and a $0.8 MM reduction compared to Alternative 14. This alternative is exactly the same as Alternative 14 in the lands recommended for wilderness. The nonwilderness lands in Alternative 10 emphasize dispersed recreation and wildlife objectives resulting in 75,000 fewer acres in the suitable timber landbase than Alternative 14. This reduces PNV. Noncash priced benefits are reduced in relation to Alternative 14 due to the reduced recreational carrying capacity associated with Alternative 10 emphasis on low intensity recreation management and minimum management on nonwilderness lands.

Alternative 10 has the third lowest discounted costs. This low level of costs goes along with the high amount of recommended wilderness and low level of timber harvest. Even with substantially reduced costs, the reduction in priced benefits (cash plus noncash) is more. This results in a PNV reduction. The tradeoff in PNV between Alternative 10 and Alternative 14 is for the nonpriced benefits associated with the additional nonwilderness roadless management of Alternative 10.

b. Net Public Benefits

Alternative 10 would designate for wilderness those areas as having recognized very high quality nonrecreation wilderness values. The Swan Range and the north end of Glacier View Ranger District, which have high nonrecreation wilderness values, would be managed as wilderness.

Those areas managed as wilderness are the Swan Front, Swan Crest, and the north end of Glacier View Ranger District. These areas correspond to the Montana's Wilderness Association's "Alternative W" recommendations of approximately 196,000 acres. In addition, the Le Beau area of the Tally Lake Ranger District and roadless portions of the Spotted Bear Ranger District are managed for primitive recreation, water protection, and wildlife. This alternative provides a large amount of acreage for primitive recreation, old growth, and nongame species habitat. Dispersed recreation objectives for Jewel Basin Hiking Area (included in the Swan Crest) would be replaced by wilderness management objectives providing primitive recreation. Semiprimitive motorized recreation opportunities would be restricted to a few areas.

Under this alternative, the quality of big-game hunting would be maintained, or perhaps slightly increased over time. The majority of existing unroaded areas of the Forest would remain unroaded, providing big-game security from human disturbance and settings for roadless hunting experiences. The miles of road needed for management would be fewer than under other alternatives. Over time, big-game population levels would be expected to increase as high investments in winter range management are made on over 95 percent of the potentially suitable winter range areas. Under this alternative, a moderate proportion (64 percent) of the potential visual quality objectives would be retained, resulting in a Forest environment with good scenic quality.

Lower timber harvest in the early decades delays increased forage production. Hunters' opportunities for success would remain stable or increase compared to the existing situation. Restrictions on motorized access and winter range management would allow big-game populations to increase.

This alternative would provide potential habitat that would allow the grizzly bear and gray wolf to reach recovery populations. Under Alternative 10, highly productive grizzly bear habitat on the Glacier View and Spotted Bear Ranger Districts would be managed to provide roadless dispersed recreation or wilderness opportunities. No additional roads would be constructed, thus security would be maintained; however, habitat could change over time and quality could decrease from current levels.

All riparian area management emphasizes wildlife and fisheries habitat. All big-game winter range acres are sustained at 95 to 100 percent of maximum potential with high levels of investment in habitat improvement. Long-term potential elk, mule deer, and whitetailed deer populations are the highest of all the alternatives. Grizzly bear habitat potential is 195 bears; about midrange among the alternatives.

Considering the range of alternatives, Alternative 10 maintains a high level of old-growth habitat on the Forest and in time would provide the best big-game winter range habitat. It emphasizes wilderness management and amenity resources. About 40 percent of the existing roadless areas would be recommended for wilderness. This alternative has a small suitable timberland base and a low long-term sustained yield capacity.

Under Alternative 10, nongame species habitat would be emphasized more than under other alternatives due to the protection of large roadless areas and management of riparian areas for wildlife.

Alternative 10 would have the lowest potential for maintaining varied plant communities. The alternative has the third lowest number of acres in the suitable timber land base. Land designations which do not allow timber harvest would provide limited opportunities for the use of fire. Much of the Forest would advance to the later plant successional stages.

Water quality under Alternative 10 would remain relatively high over the first and second decades; however, localized adverse impacts on fisheries and water-based recreation opportunities could still occur.

Average annual timber harvest levels for the first five decades correspond closely to Alternative 1; Decade 1 average annual harvest is 80 MMBF. Decade 1 provides about 68 percent of the RPA target. By Decade 5 the scheduled harvest would rise to 144 MMBF per year, about 86 percent of the Decade 5 RPA target. Timber management is concentrated on the more productive sites where other resource values are not significant (generally those with a potential productivity of 50 cubic feet/acre/year or more). Long-term sustained yield capacity is 142.1 MMBF/year is produced on 612,300 suitable acres.

Employment opportunities decline in the first decade, particularly in the wood products industry. Potential employment associated with recreation and wilderness opportunities, especially those associated with hunting and fishing, partially offset the decline in economic stability that would result from decreased timber harvest levels.

ALTERNATIVE 11

The goal of Alternative 11 is to provide a level of timber harvest to local mills that is consistent with recent harvest levels while at the same time responding to the growing recreational use of the Flathead area. Alternative 11 has an additional objective for adding to the Bob Marshall Wilderness.

The recommended wilderness additions include 5,187 acres in the Limestone Cave area of the East Side South Fork roadless area and 43,667 acres in Swan Front south of Inspiration Point.

a. Analysis of Constraints

PNV = $499,400,000
Change from PNV Benchmark = $106,100,000
Discounted Cost = $412,500,000

The PNV achieved is $499.4 MM; ranking eight or the midrange of the alternatives.

Alternative 11 has a reduction of 106.1 million dollars compared to the PNV Benchmark, and a $2.8 MM reduction compared to Alternative 10. PNV is lower due to increased costs for grizzly bear habitat management and improvement. The additional implementation costs for grizzly bear habitat and other uses such as dispersed recreation account for Alternative 11 being more costly than Alternatives 10, 12, 13, and 14. These alternatives designate significantly more acres in relatively low cost wilderness. Alternative 11 has an average annual Decade 1 budget $2.9 MM more than Alternative 10. This results in total discounted costs of $61.5 MM more in Alternative 11 than Alternative 10. The PNV due to recreation benefits changes little by adding acres to the wilderness system and/or reducing the management intensity on nonwilderness cause the capacity of the Forest to be less than the projected recreation use in the first five decades. This is why Alternative 10 has significant reductions in noncash benefits compared to Alternative 11.

In addition, PNV is reduced because of higher timber outputs, visual quality, and threatened and endangered habitat objectives which require more investments in Decade 1.

The tradeoff in PNV between Alternative 10 and Alternative 11 is a combination of nonpriced public benefits in the areas of community stability and local lifestyles, dispersed recreation quality and diversity, threatened and endangered species habitat, and plant community diversity.

b. Net Public Benefits

Alternative 11 would preserve as wildernesss the Swan Front from Inspiration Point south. Also, the Limestone Caves along Spotted Bear River are included. The qualities of natural integrity, natural appearance, and opportunities for solitude are the highest for the Swan Front when compared with the other roadless areas. These additions to the existing Bob Marshall Wilderness ecosystem would result in improved nonrecreation wilderness values.

All types of recreation opportunities are emphasized. The wildernesses and the Flathead Wild and Scenic River would be managed with higher levels of investment in trail maintenance, access sites, trailhead facilities, and visitor information. Alternative 11 adds the highest quality area to the existing Bob Marshall-Great Bear-Scapegoat Wilderness Complex. High quality dispersed and developed recreation opportunities would be available because of increased investment in recreation facilities. This alternative focuses on balanced multiple-use management, and the addition of areas with high wilderness values and manageable boundaries.

A high level of roaded and roadless dispersed recreation opportunities would be provided throughout the Forest. The north end of Glacier View District would be managed to improve grizzly bear habitat; however, the existing unroaded areas of concern--Spotted Bear River, Glacier Slough, and the Swan Range--would be managed to provide roadless recreation opportunities. Variety and quality of the roadless recreation setting would be high. Roaded recreation opportunities would be restricted by the road management program.

Under Alternative 11, the visual quality of the Forest would be improved over the existing situation and all other alternatives except Alternative 3. Potential visual quality objectives are met in highly critical areas and important recreation areas.

Under Alternative 11, the visual quality of the Forest would be improved over the existing situation and all other alternatives except Alternative 3. Potential visual quality objectives are met in highly critical areas and important recreational areas.

This alternative would provide potential elk, mule deer, and whitetailed deer habitat at 80 percent of maximum potential level. Important fisheries streams would be managed to protect and improve fisheries habitat. About 94,000 acres of the Forest would be managed to improve grizzly bear habitat as the primary emphasis. Security would be provided as an important part of habitat emphasis. This includes a 61,000 acre Trail Creek Grizzly Bear Management Area recommended for special area classification in the north end of the Glacier View Ranger District. This would contribute to grizzly bear and gray wolf recovery, and helps to achieve a 201-bear habitat potential. Furbearers and nongame species are maintained. Land use patterns combined with habitat and road management practices will provide a desirable mix of wildlife resources on a sustained yield basis. This alternative maintains a pleasant setting in the Flathead Valley.

Alternative 11 would generally maintain the existing quality of big-game hunting over time. Moderate increases in access would occur at the roads needed for management are constructed. Restrictions on motorized access, however, would be imposed to meet management objectives. Roadless dispersed recreation land designations provide security from human disturbance for big game and an unroaded hunting environment. Management of about 75 percent of the whitetailed deer winter range and over 90 percent of the mule deer/elk winter range, to improve forage production, would increase potential elk, mule deer, and whitetailed deer populations over time. Increased big-game numbers could offset the potential impacts of slightly increased access.

Alternative 11 would meet the intent of the Grizzly Bear Recovery Plan through a mix of land designations and management objectives that would protect grizzly bear habitat and provide the opportunity to attain a recovered population.

Nongame species habitat is protected and moderately enhanced in Alternative 11. The percentage of Forest lands contributing old growth and snag cavity habitat is moderate in comparison to other alternatives. Other types of habitat to support all nongame species would exist at moderate levels by the end of the fifth decade. Some areas would be managed specifically for nongame species.

Water quality would remain at existing levels. Risks associated with maintaining timber harvest at a level that would not cause unreasonable economic displacement are projected to increase. As a result of the geographic location of economically operable timber stands, timber harvest for Decades 1 and 2 must come from the same drainages as past timber harvest. Recognition of risk areas, attention to good project level management practice and mitigation measures would maintain desirable water quality.

The variety of plant communities would improve over the existing situation generally through timber harvest. Those acres on which roadless dispersed recreation opportunities are provided would advance to the later plant successional stages. Grizzly bear habitat would provide opportunities for use of fire in limited areas.

The first decade timber harvest level is 100 MMBF, increasing by the fifth decade to 157 MMBF. This timber harvest schedule would provide 85 percent of the Decade 1 RPA target and 94 percent of the Decade 5 RPA timber target.

Economic stability would be promoted by Alternative 11, with management emphasis placed on the full array of resources significant to the local economy. Economic growth would be slow but spread throughout important industrial sectors.

This alternative would provide good opportunities to maintain existing land use patterns and lifestyles. Local residents would be afforded access to the Forest, yet access restrictions would be sufficient to maintain a variety of settings for hunting, fishing, and other activities occurring in a forested environment. Some roadless environments would be maintained. Firewood would continue to be accessible.

ALTERNATIVE 15

The goal of Alternative 15 is to provide a level of timber harvest to local mills consistent with recent levels while at the same timbe responding to the growing recreational use of the Flathead area. Alternative 15 has an additional objective of adding substantial wilderness acres to the National Wilderness Preservation System.

The recommended wilderness addition includes the areas recommended by the Montana Wilderness Association's "Alternative W" plus portions of roadless areas along the Spotted Bear River, the Middle Fork of the Flathead River, the South Fork of the Flathead River, and the Young-Nasukoin portion of the Thompson Seton roadless area for a total of 260,200 acres of new wilderness.

a. Analysis of Constraints

PNV = $497,700,000
Change from PNV Benchmark = $107,800,000
Discounted Cost = $389,400,000

The PNV of this alternative is $497.7 MM, a reduction of 107.8 million dollars compared to the PNV Benchmark. The reduction in PNV of 1.7 million dollars from Alternative 11 is due to a combination of reduced recreational capacity for dispersed recreation and reduced PNV from less timber benefits due to a reduced suitable timber base. The tradeoff in PNV compared to Alternative 11 reflects the value of priced benefits foregone for the gain in nonpriced wilderness benefits resulting from including over half the current roadless acres with the highest wilderness values.

Reduced costs due to low cost wilderness additions improve net receipts compared to Alternative 11.

Reduced recreational carrying capacities also reduce net value because projected dispersed recreation use for all categories exceeds the capacity of the Forest. This reduces noncash benefits and PNV.

b. Net Public Benefits

Alternative 15 would recommend 53 percent of the existing roadless areas to wilderness.

All types of recreation opportunities are emphasized subject to meeting wilderness objectives. The wildernesses and the Flathead Wild and Scenic River would be managed with higher levels of investment in trail maintenance, access sites, trailhead facilities, and visitor information. Wilderness capacity is 398

MRVD's/year, 49 percent of Decade 5 projected use. Alternative 15 provides a roadless dispersed potential of 199 MRVD's/year, 54 percent of Decade 5 projected use. Roaded natural-appearing dispersed recreation potential is 1,189 MRVD's/year, 96 percent of Decade 5 projected use.

Roadless dispersed recreation opportunities would be reduced from Alternative 14. Alternative 15 would limit the semiprimitive recreation opportunities more than Alternative 14 by designating additional wilderness in the Slippery Bill and Spotted Bear River areas. The north end of Glacier View District would be managed as wilderness to a greater degree than Alternative 14 with additional wilderness designation in the Young-Nasukoin area of the Thompson Seton roadless area. The other existing high value roadless areas would be managed to provide a spectrum of roadless recreation opportunities. These areas include Deadhorse, Coal Ridge, Standard Peak, Le Beau, and high value areas in the Middle Fork and South Fork.

Alternative 15 would add to recreation wilderness values over Alternative 14 by increased acres recommended for classification in the Spotted Bear River, Slippery Bill Mountain, and Young-Nasukoin areas.

Under Alternative 15, the visual quality of the Forest would be improved over the existing situation. Potential visual quality objectives are met in highly critical areas and in important recreational areas. These areas are similar to those in Alternative 14.

Alternative 15 would generally maintain the existing quality of big-game hunting over the short range. Long-term big-game winter browse potential would be somewhat reduced. Hunting opportunity would be changed from the existing situation due to the amount of the Forest with restricted motorized access.

Alternative 15 would meet the intent of the Grizzly Bear Recovery Plan. Road access to the Forest would be slightly more restrictive. Important fisheries streams would be managed to protect and improve fisheries habitat.

About 20,600 acres of the Forest would be managed to improve grizzly bear habitat, but would not receive formal classification. Additional security provided by wilderness in place of multiple-use areas balances the change in long-term potential where wilderness is substituted for active bear habitat maintenance and improvement. As a result, bear habitat potential is 202 bears similar to Alternative 13 and 14. Furbearers and nongame species are maintained at levels comparable to Alternative 8.

Nongame species habitat is protected and moderately enhanced in Alternative 15. The percentage of Forest lands contributing old growth and snag cavity habitat is high in comparison to other alternatives. Other types of habitat to support all nongame species would exist at moderate levels by the end of the fifth decade. Some areas would be managed specifically for nongame species in riparian and amenity value areas, such as Canyon Creek and the East Shore Flathead Lake area.

The first decade timber harvest level is 99 MMBF/year, increasing by the fifth decade to 156 MMBF/year. This timber harvest schedule provides 84 percent of the Decade 1 RPA timber target and 93 percent of the Decade 5 target. The long-term sustained yield capacity (154 MMBF/year) is less than Current Direction (165 MMBF/year). Decade 1 timber harvest outputs are maintained but Decade 3 and beyond has reduced timber harvest.

Economic stability would be provided by this alternative. Economic growth would be slow and the future potential would be reduced from Alternative 11 due to the reduced timberbase and reduced recreation capacity and opportunities.

Alternative 15 would provide reduced opportunities to maintain existing land-use patterns and lifestyles. Motorized access to the Forest would be reduced in traditionally used areas such as the Swan Crest and Slippery Bill areas. Most roadless environments would be maintained.

ALTERNATIVE 2

This alternative focuses on the active use of National Forest lands and on resource development. It provides for high levels of commodity extraction tempered by concern for other resources. In this alternative, there would be fewest restrictions on people's use of the Forest. No new wilderness is recommended.

a. Analysis of Constraints

PNV = $494,700,000
Change from PNV Benchmark = $110,800,000
Discounted Cost = $456,400,000

This alternative has a PNV of $494.7 MM, a reduction of $110.8 MM when compared to the PNV Benchmark. The reduction of $3 MM PNV when compared to Alternative 15 results primarily from the high Decade 1 timber harvest objective. It is economically less optimal to harvest high volumes of timber in Decade 1 because the average timber stand on the Flathead National Forest is increasing in value faster than the 4 percent discount rate. High costs are also necessary to support higher harvest objectives including production on some economically suboptimal lands which reduce PNV.

The slightly lower funding levels for existing wilderness management, implying fewer recreation benefits to contribute to PNV, decrease this alternative PNV from Alternative 6.

The discounted costs for this alternative are the highest of any of the alternatives. Funding for all types of management - recreation, wildlife, range, and timber - are at a high level in this alternative. This high level of funding contributes to the high discounted costs, as well as high levels of investments in timber management and roads to support timber harvest objectives.

Nonpriced benefits in the areas of nonrecreation wilderness values, threatened and endangered species habitat, and water quality risk are traded off in addition to priced benefits represented by PNV reduction when compared to Alternative 15.

b. Net Public Benefits

Increased motorized access to the Forest lands would increase the variety of roaded recreation settings. Roadless dispersed recreation generally would be limited to nonproductive lands of the Forest. Some of the productive areas including portions of the north end of Glacier View District, the Spotted Bear River, Glacier Slough, and the Swan Range would be accessed and harvested. The variety of roadless settings would be reduced in this alternative.

High levels of motorized access to the Forest would afford residents of the area opportunities to gather firewood and pursue a variety of active recreational activities. Existing big-game hunting and fishing settings, however, would change over time, impacting a significant component of local lifestyles. Existing relationships to the Forest would change as unroaded areas are accessed for timber production, and the natural-appearing landscape is modified.

This alternative has a high level of dispersed recreation opportunities which also contribute to the PNV of this alternative. Roadless acres managed expressly to provide roadless recreation opportunities that are high. Funding for management is also generally high; therefore, this alternative would create an environment where trails and trailhead facilities were well maintaiend throughout the Forest. The road management program provides a high level of road access to the Forest. Wildernesses are managed with higher intensities of management and funding only where high levels of use are currently impacting the wilderness resource. No additions to current wilderness are recommended.

This alternative would significantly reduce the overall visual quality of the Forest compared to the current situation; however, the critical viewing areas--the most frequently seen by area residents and visitors--generally would retain or partially retain their natural appearance.

Big-game management opportunities are the best of all the alternatives from the third through eighth decades. Although potential big-game populations are high, the high level of road access will adversely affect roadless hunting opportunities.

Alternative 2 would alter the quality of big-game hunting due to significant increases in motorized access. Hunting season access would be almost double the existing situation, affording hunters quick and easy harvest opportunities. Year-round access also increases, reducing big-game security. By the fifth decade, few unroaded environments would remain outside the wildernesses, reducing the variety of environmental settings available to the hunter. The potential impacts of increased motorized access are somewhat offset by the high elk, mule deer, and whitetailed deer population potentials.

Some highly productive grizzly bear habitat would be roaded and managed for timber production. Roading these areas, while not lowering the population, would lower the quality of the habitat. High levels of access would decrease the population's security from human disturbance.

Water quality throughout the Forest would be at relatively high risk under Alternative 2.

Sufficient habitat to maintain viable populations of all nongame species would be maintained. By the fifth decade, old-growth habitat for old growth and snag cavity dependent species would be among the lowest of all alternatives, which habitat for grass forb and shrub dependent species would increase significantly. Comparatively few acres would be managed specifically to provide nongame species habitat.

Permitted livestock AUM's are second highest of all the alternatives, but still substantially below RPA targets.

The composition of plant communities under Alternative 2 would be relatively varied, affected by timber harvest. Management which would preclude timber harvest generally would occur in high areas on nonproductive lands, so the majority of the timbered lands would be subject to regulated manipulation of the vegetation.

First decade average annual timber harvest is 116 MMBF, third highest of all alternatives would increase to 177 MMBF per year by Decade 5. This timber harvest schedule will provide 98 percent of Decade 1 RPA target and 106 percent of the Decade 5 target. The long-term sustained yield is 180 MMBF, second highest of the alternatives is produced on 775,016 suitable acres.

The increase in employment opportunities resulting from increased timber generally increases economic stability. Potential declines in employment opportunities in recreation and tourism businesses resulting from lower hunting amd recreational opportunities, however, could degrade economic stability slightly.

ALTERNATIVE 4

The goal of this alternative is to provide a high level of revenue to the Federal Treasury while maintaining the lowest level of costs possible. Commodity resources are emphasized. Their management is guided primarily by economic criteria. Management for goods and services that do not produce revenue would be minimal and limited to areas where existing use of the Forest is high.

a. Analysis of Constraints

PNV = $493,800,000
Change from PNV Benchmark = $111,700,000
Discounted Cost = $360,700,000

The PNV of this alternative is $493.8 MM, 111.7 million dollars less than the PNV Benchmark. In addition to the general constraints, this business-like alternative provides limited opportunities for recreation use. Because recreation use opportunities provide benefits computed in the PNV of the Forest, this alternative provides a lower PNV. Alternative 4 has the lowest noncash benefits of all alternatives due to the emphasis on cash receipts. This alternative is the most productive of commodity benefits per dollar spent of all the alternatives. Recreation management is financed on the highest value areas with existing investments such as trails. Alternative 4 has the lowest Decade 1 budget, and by Decade 5 it would be producing the highest net receipts to the U.S. Treasury of any alternative. Total discounted costs are also low. Minimum management to reduce costs is featured on a large part of the noncommodity producing areas of the Forest. The Decade 1 timber harvest floor is relaxed to permit higher profits from timber sales, however, nondeclining yield is maintained.

Alternative 4 has a $0.9 MM reduction in PNV in relation to Alternative 2 primarily due to the low noncash benefits. Alternative 4 trades off noncash priced benefits and nonpriced public benefits in favor of cash receipts. This results in lower PNV.

b. Net Public Benefits

This alternative does not highlight recreation opportunities because recreation contributes few revenues to the Federal Treasury. All wildernesses, Wild and Scenic River areas, and

Jewel Basin are managed at low funding levels. No new wilderness is recommended. Alternative 4 provides the lowest developed and roadless dispersed recreation opportunities. The number of permitted AUM's is fourth highest of all the alternatives.

The limited emphasis on recreation in this alternative results in low dispersed recreation setting quality and diversity. Roadless recreation is emphasized on relatively few acres and only where existing use levels are high. Many of the areas with high quality roadless dispersed recreation potential are accessed and managed for timber or managed with minimal investment. The productive acres of the north end, the Swan Range, Glacier Slough, and Spotted Bear River are accessed. The variety of roaded recreation settings would increase as more areas of the Forest are accessed.

Big-game winter range management is low considering the range of alternatives considered. The road management program would maintain a high level of public road access. Visual quality is not emphasized because of the costs. About 38 percent of the Forest's potential visual quality objectives are met, and only in critical viewing areas.

Alternative 4 would alter big-game hunting quality from the existing situation. Potential populations, particularly of whitetailed deer, would be low relative to other alternatives. Revenue maximizing management objectives preclude any significant investment in winter range management. Access to the Forest would be relatively unrestricted. Few unroaded areas would remain by the fifth decade. Hunters would have easy access to most of the nonwilderness Forest. Populations of elk and deer could be harvested more easily and quickly. By the fourth and fifth decades, hunter success opportunities could be significantly impacted.

Under Alternative 4, opportunities to achieve a recovered population of grizzly bears are most limited of all alternatives. The timber harvest and roads would impact most productive grizzly bear habitat. Minimum management on a high proportion of the Forest would not allow for any habitat improvement or security measures.

Habitat for nongame species would be provided only as a consequence of achieving other management objectives. Old growth would be retained in early decades due to low timber harvest volumes but, by Decade 5, acres contributing old-growth habitat would be reduced. Other habitats for nongame species would be provided at moderate levels.

The relatively low first and second decade timber harvest levels protect the Forest's watersheds. This alternative would have relatively few watershed risks for these decades. By Decade 5, however, potential watershed impacts would be among the highest of all the alternatives.

Alternative 4 would provide plant community variety adequate to maintain natural diversity of ecosystems. Timber harvest would improve the existing distribution of tree species and age classes.

Under this alternative, oil and gas exploration and development would have the least constraints compared to other alternatives.

The long-term sustained yield (175 MMBF) is third highest of the alternatives. In addition, the low timber harvest levels of the first two decades (51 MMBF and 84 MMBF) provide opportunities to delay timber harvest to maximize profits by taking advantage of the real price increases and value growth of timber stands. These harvest levels are the lowest of any alternative and reflect profit emphasis. These harvest levels adversely affect the local economy, causing decreases in employment. The Decade 1 harvest would provide 43 percent of the RPA timber target, and by Decade 5 Alternative 4 would provide 105 percent of the RPA target.

Economic stability under Alternative 4 would be significantly and adversely impacted by low timber harvest volumes and low recreation opportunities. Losses in employment opportunities would be higher than under any other alternative.

This alternative would alter existing relationships to the Forest. Unroaded areas would be accessed, and the visual quality of the Forest would be modified. Roaded access opportunities would be very high, but opportunities for hunting, and recreation would be low. The Forest would be minimally managed for local residents' use, providing instead opportunities to return dollars to the Federal Treasury.

ALTERNATIVE 8

The goal of this alternative is to provide a level of timber harvest to local mills that is consistent with recent harvest levels while at the same time responding to the growing recreational use of the Flathead Valley. This alternative also focuses on maintaining a pleasant setting but to a lesser extent than Alternative 3. Timber harvest activities would be allowed to occur in frequently seen areas, but they would be designed to minimize the impact on the view. This alternative emphasizes achieving a recovered population of grizzly bears.

a. Analysis of Constraints

PNV = $492,800,000
Change from PNV Benchmark = $112,700,000
Discounted Cost = $424,600,000

The PNV achieved is $492.8 MM, $112.7 MM less than the PNV Benchmark and $1.0 MM less than Alternative 4.

Alternative 8 provides the recreation opportunities missing in Alternative 4, but the PNV remains similar due to the addition of costs associated with visual quality objectives and acres managed to improve grizzly bear and other wildlife and fisheries habitat. Alternative 8 has significantly higher costs than Alternative 4 in order to provide increased noncash priced benefits and nonpriced benefits. Increased nonpriced benefits in the areas of threatened and endangered species habitat, visual quality, nonwilderness recreation opportunities, and community stability are significantly higher than Alternative 4 or the PNV Benchmark.

The Decade 1 harvest level of 100 MMBF/year is further constrained in comparison to the Maximum PNV Benchmark to minimize environmental effects due to distribution of the harvest. Timber harvest is constrained by grizzly habitat management objectives on approximately 30,000 suitable acres, visual quality objectives on approximately 10,000 acres, big-game winter range management on about 50,000 acres, and riparian management on 9,000 suitable acres. These acres have constraints on economically optimal timber harvest considerably higher than the PNV Benchmark and results in a tradeoff of PNV.

b. Net Public Benefits

This alternative provides dispersed recreation opportunities throughout the Forest. The north end of Glacier View Ranger District would be managed to improve grizzly bear habitat; however, the existing unroaded acres of concern--Spotted Bear River, Glacier Slough, and the Swan Range--would be managed to provide roadless recreation opportunities. Variety and quality of the roadless recreation setting would be high.

Roaded recreation opportunities would be restricted by the road management program.

This alternative focuses roadless dispersed recreation management on areas with identified high recreation values. It also provides for high management funding for recreation areas, increasing the number of opportunities available from a given area. Wilderness and developed recreation site management is conducted more intensively and with higher funding levels to improve the quality of the recreation opportunities and resource protection. No addition to the existing National Wilderness Preservation System is recommended.

Under Alternative 8, the visual quality of the Forest would be improved over the existing situation and all other alternatives except Alternative 3. Potential visual quality objectives are met in highly critical areas and important recreational areas, making timber management more costly.

Big-game populations are lower than several other alternatives until the fifth decade, when they rise above Current Direction and Alternative 5 to be third highest of all the alternatives. Road access restrictions and the big-game population levels combine to provide a high level of hunting opportunities that is similar to Alternative 3. Livestock grazing opportunities would be the same as under Alternative 3 and moderate in the range of alternatives.

Alternative 8 generally would maintain the quality of big-game hunting producing the same long-term effects as Alternative 3.

Alternative 8 would meet the intent of the Grizzly Bear Recovery Plan through a mix of land designations and management objectives that would protect grizzly bear habitat and provide the opportunity to attain a recovered population. A high proportion of the highly productive grizzly bear habitat would be managed to maintain and improve the important habitat components. Security would be provided for grizzly bears and gray wolf populations.

Nongame species habitat would be protected and moderately enhanced.

Plant community composition and variety under this alternative would also be similar to Alternative 3. Variety would improve over the existing situation, generally through timber harvest, and grizzly bear habitat management would provide opportunities to use fire to manipulate vegetation. The 200-bear habitat potential provided by Alternative 8 land use assignments meets the intent of the Grizzly Bear Recovery Plan. Plant communities in areas where timber harvest would not be compatible with management objectives would advance to the later successional stages.

Watershed risk under Alternative 8 would not be high. Nonpriced benefits are provied at a reasonably high level to respond to public issues.

This alternative would provide a well-rounded response to local residents' land-use patterns and would maintain current lifestyles. Economic stability would be provided through a balanced priced and nonpriced resource management.

The first decade harvest level (100 MMBF) is consistent with the Forest's average harvest volumes of the last 15 years and provides 85 percent of RPA Decade 1 timber harvest. By Decade 5, Alternative 8 provides 99 percent of RPA with a projected harvest of 166 MMBF per year. The long-term sustained yield is 165 MMBF per year produced on 720,227 suitable acres.

Alternative 8 would provide good opportunities to maintain existing lifestyles and land use patterns. Economic stability would be provided with potential for very moderate growth in all important economic sectors.

ALTERNATIVE 3

The goal of Alternative 3 is to provide a level of timber harvest to local mills that is consistent with recent harvest volume levels while at the same time responding to the growing recreational use of the Flathead Valley. Because a significant portion of the Flathead National Forest is frequently viewed by recreationists, this alternative would focus on maintaining a pleasant setting. While timber harvest activities would be allowed to occur in frequently seen areas, they would be designed to minimize the impact on the view.

a. Analysis of Constraints

PNV = $489,600,000
Change from PNV Benchmark = $115,900,000
Discounted Cost = $415,000,000

The PNV achieved is 489.6, almost 116 million dollars lower than the PNV Benchmark. Alternative 3 displays a PNV of $3.2 MM less than Alternative 8 because of the high level of visual quality objectives. Priced benefits primarily in timber values, are traded off in return for nonpriced public benefits in relation to Alternative 8. High funding for recreation opportunities providing benefits somewhat offsets the higher costs of managing to retain visual quality. Relatively high levels of big-game winter range habitat, riparian fisheries management, roadless dispersed recreation, along with moderate grizzly bear habitat emphasis increase costs and constrain timber harvests compared to the Maximum PNV Benchmark.

b. Net Public Benefits

Alternative 3 provides a high level of variety in roaded and roadless dispersed recreation settings distributed throughout the Forest. Generally, quality settings, including those of high public concern, would be protected. Roaded recreation opportunities would be restricted by the road management program, but the quality and variety of opportunities should be higher than exists currently.

The high level of dispersed recreation opportunities of this alternative also contribute to the PNV. High funding levels provide management opportunities to highlight the Forest's recreation settings. Roaded recreation opportunities are also high. The road management program provides road access opportunities that are moderate in the range of alternatives, increasing substantially during the summer but only slightly during hunting season. Wilderness management is conducted more intensively and with higher funding levels to improve the quality of wilderness recreational opportunities and wilderness quality. No new wilderness is recommended.

Alternative 3 would maintain a Forest environment where the visual quality over time improved from the existing situation and would be of higher quality than in the other alternatives. This alternative meets more of the inventoried potential visual quality objectives than any other alternative.

Livestock grazing would be moderate in the range of alternatives.

Alternative 3 would generally maintain the existing quality of big-game hunting over time. Moderate increases in access would occur as the roads needed for management are constructed. However, restrictions on motorized access would be imposed to meet management objectives. Roadless dispersed recreation land designations provide security from human disturbance for big game and an unroaded hunting environment. Management of between 75 and 85 percent of the potential winter ranges to improve forage production would increase potential elk, mule deer, and whitetailed deer populations over time. Increased big-game numbers could offset the potential impacts of slightly increased access.

Under Alternative 3, the Forest's share of a recovered population of grizzly bears is approached. Some of the highly productive grizzly bear habitat is managed to improve food production and cover forage relationships; however, other portions would be roaded and managed for timber production. High levels of roadless dispersed recreation and other amenity resource land designations provide some habitat security.

Nongame species habitat is protected and moderately enhanced in Alternative 3. The percentage of Forest lands contributing old growth and snag cavity habitat is moderate in comparison to other alternatives. Other types of habitat to support all nongame species would exist at moderate levels by the end of the fifth decade. Some areas would be managed specifically for nongame species.

Under Alternative 3, activities with potential risk to water quality would occur in watersheds throughout the Forest to a moderate level in Decades 1 and 2. Soil disturbing activities would increase slightly by Decade 5.

The variety of plant communities would improve over the existing situation generally through timber harvest. Those acres on which roadless dispersed recreation opportunities are provided would advance to the later plant successional stages. Grizzly bear habitat would provide opportunities for use of fire in limited areas.

About 89 percent of the Forest's potential visual quality objectives would be met, the highest of all the alternatives. Timber management is more costly due to these objectives. In addition, the timber harvest level of this alternative is 101 MMBF per year in the first decade, consistent with the average Forest harvest volumes of the last 15 years. Alternative 3 projects a timber harvest schedule that provides 86 percent of RPA Decade 1 timber target and 96 percent of RPA Decade 5 targets. Long-term sustained yield is 165.5 MMBF per year from 715,289 suitable acres.

Economic stability would be promoted by Alternative 3, with management emphases placed on the full array of resources significant to the local economy. Economic growth would be slow but spread throughout important industrial sectors.

This alternative would provide good opportunities to maintain existing land use patterns and lifestyles. Local residents would be afforded access to the Forest, yet access restrictions would be sufficient to maintain a variety of settings for hunting, fishing, and other activities occurring in a forested environment. Some roadless environments would be maintained. Firewood would continue to be accessible.

ALTERNATIVE 5

This alternative emphasizes protective management in some areas of the Forest where roadless and/or wildlife values are believed to be highly significant. The Swan Mountain Range, the Le Beau area of the Tally Lake Ranger District, and the roadless portions of the north end of the Glacier View and Spotted Bear Ranger Districts would be managed for roadless recreation, watershed protection, wildlife, and other amenity values. In other areas, timber management would be emphasized. No additions to the existing National Wilderness Preservation System would be made at this time, but future options would be preserved.

a. Analysis of Constraints

PNV = $488,500,000
Change from PNV Benchmark - $117,000,000
Discounted Cost = $383,800,000

The PNV of this alternative is $488.5 MM. Alternative 5 has a reduction of almost 117 million dollars compared to the PNV Benchmark, and a $1.1 MM reduction compared to Alternative 3. This alternative, however, reflects the costs of a reduced timber base and a high level of amenity land designations with very little of the reduction in PNV associated with visual considerations. The relatively low long-term sustained yield has the effect of lowering PNV. This alternative has a high level of constraints on the production of commodity outputs due to the emphasis of roadless resource values and other nonpriced benefits. The suitable timber base is restricted to the high productivity site which are currently roaded or partially roaded. The tradeoff of priced timber benefits is of a magnitude to reduce PNV even though costs are low for Alternative 5.

b. Net Public Benefits

This alternative emphasizes protective management in some areas of the Forest where roadless and/or wildlife values are believed to be highly significant. The Swan Mountain Range, the Le Beau area of the Tally Lake Ranger District, and the roadless portions of the north end of the Glacier View and Spotted Bear Ranger Districts would be managed for roadless recreation, watershed protection, wildlife, and other amenity values. In other areas, timber management would be emphasized.

This alternative maintains the largest nonwilderness acreage in a roadless state of all the alternatives. Protection of these unroaded areas provides security from human disturbance for wildlife, including grizzly bears. The potential bear population could increase from the current level, but habitat potential in the long term ranks fourth lowest among alternatives. About 98 percent of the potential winter ranges are managed to optimize forage production and cover/forage relationships. While big-game population potential does not immediately increase, it does over the long term, becoming the highest of all alternatives. Road management is oriented toward maintaining the current level of road access during the hunting season and only slightly increasing year-round access. Visual quality under this alternative would be moderate considering the range of alternatives and very similar to Alternative 1. Nonwilderness recreation opportunities also would be moderate. Management of the wildernesses would intensify to mitigate impacts of recreationists and protect the wilderness values. No additions to the existing National Wilderness Preservation System would be made at this time, but future options would be preserved.

Alternative 5 would retain the roadless areas which have special recreation and other resource values (including the north end, the Swan Range, Glacier Slough, and Spotted Bear River) thereby providing the highest potential for primitive roadless dispersed recreation opportunities of all the alternatives. The distribution of roadless opportunities, however, is limited because some areas of the Forest would have no management direction for dispersed recreation. Roaded recreation opportunities would be limited by the restrictive road management program.

The visual quality associated with Alternative 5 would be adequate in critical and important areas.

Alternative 5 would maintain, or perhaps slightly increase over time, the quality of big-game hunting. The majority of existing unroaded areas of the Forest would remain unroaded, providing big-game security from human disturbances and settings for roadless hunting experiences. The miles of road needed for management would be fewer than under other alternatives. Motorized access during hunting season would remain at the existing levels although year-round access would slightly increase. Over time, population levels would be expected to increase as high investments in winter range management are made on over 95 percent of the potentially suitable winter range acres.

Lower timber harvest in the early decades, however, delays increased forage production. Hunters' opportunities for success would remain stable or increase as restrictions on motorized access and winter range management allowed population opportunities to increase.

Alternative 5 would provide potential habitat that would allow the potential grizzly bear and gray wolf population to approach the recovery target. Under Alternative 5, however, highly productive grizzly bear habitat on the Glacier View and Spotted Bear Districts would be managed to provide roadless dispersed recreation opportunities. No additional roads would be constructed, thus security would be maintained. Habitat, however, could change over time and quality decrease from current levels.

Under Alternative 5, nongame species habitat would be emphasized more than under other alternatives due to the protection of large roadless acres, management of riparian areas for wildlife, and designation of land as management of nongame species habitat. By the fifth decade, habitat to support old growth and snag cavity dependent species would be among the highest of all alternatives.

Water quality risk would be relative low. Over the long run, water quality would be best protected by this alternative.

Alternative 5 would have low potential for maintaining varied plant communities. Timber would be managed on the third lowest of all the alternatives. Land designations which do not allow timber harvest would provide limited opportunities for the use of fire. Much of the Forest would advance to the later plant successional stages.

The first decade timber harvest of 82 MMBF provides 69 percent of Decade 1 RPA target, and by Decade 5, the projected harvest schedule could provide 90 percent of RPA. The long-term sustained yield of 152 MMBF is produced from 651,206 acres. This alternative has the third smallest land base suitable for timber management. This decreases the potential priced cash benefits generated through timber harvest.

Alternative 5 would adversely affect local economic stability. Employment and income provided by the wood products industry would be reduced. Potential employment associated with recreation and tourism is low paying and any gains in that sector would not offset economic reductions in commodity outputs. Local lifestyles would be affected as a result of economic changes.

ALTERNATIVE 17 (PREFERRED ALTERNATIVE)

The goal of the Preferred Alternative is to provide a level of timber harvest to local mills that is consistent with recent harvest levels while at the same time responding to the growing recreational use of the Flathead area. Alternatives 17 has an additional objective for adding to the Bob Marshall Wilderness and high quality wilderness in the Jewel Basin area of the Swan Mountains.

The recommended Bob Marshall Wilderness additions includes 5,187 acres in the Limestone Cave area of the East Side South Fork roadless area, and 54,800 acres in Swan Front and Bunker Creek area. The Jewel Basin area recommended for wilderness classification is approximately 18,580 acres, and 6,295 acres is recommended for addition to the Great Bear in the Slippery Bill Mountain area.

a. Analysis of Constraints

PNV = $483,000,000
Change from PNV Benchmark = $123,000,000
Discounted Cost = $401,200,000

Alternative 17 (Preferred Alternative) has a PNV of $483.0 MM, a reduction of $122.5 MM compared to the PNV Benchmark and a $5.5 MM reduction compared to Alternative 5. PNV is relatively low due to increased costs for grizzly bear habitat management and improvement, recreation management and higher timber outputs than Alternative 5. Receipts from timber are constrained by more wildlife and visual quality constraints in Alternative 17 than Alternative 5. Higher Decade 1 timber harvest objective also results in a tradeoff of PNV for nonpriced public benefits in the area of community stability. Alternative 17 is constrained to harvest more acres of lodgepole pine than scheduled by other alternatives and the PNV Benchmark due to predicted losses of merchantable volume due to mountain pine beetle. This results in a tradeoff of PNV because more profit can be made logging more valuable mixed species of trees on gentle slopes. Alternative 17 provides high levels of noncash benefits (which increase costs) and nonpriced benefits (particularly in responding to public issues) compared to the PNV Benchmark. Resolving public issues through an appropriate balance of priced and nonpriced public benefits results in a tradeoff of PNV.

b. Net Public Benefits

All types of recreation opportunities are emphasized. The wildernesses and the Flathead Wild and Scenic River would be managed with higher levels of investment in trail maintenance, access sites, trailhead facilities, and visitor information. Alternative 17 adds the highest quality areas to the existing Bob Marshall-Great Bear-Scapegoat Wilderness Complex. High quality dispersed and developed recreation opportunities would be available because of increased investment in recreation facilities. This alternative focuses on balanced multiple-use management, and the addition of areas with high wilderness values and manageable boundaries.

Alternative 17 would preserve as wilderness the Jewel Basin area, the Swan Front from Inspiration Point south, and part of the Bunker Creek area. Also, the Limestone Caves along Spotted Bear River and the Slippery Bill Mountain area are included. The qualities of natural integrity, natural appearance, and opportunities for solitude are the highest for the Swan Front when compared with the other roadless areas. These additions to the existing Bob Marshall Wilderness Ecosystem would result in improved nonrecreation wilderness values.

A high level of roaded and roadless dispersed recreation opportunities would be provided throughout the Forest. The north end of Glacier View District would be managed to improve grizzly bear habitat; however, the existing unroaded areas of concern--Spotted Bear River, Glacier Slough, and the Swan Range--would be managed to provide roadless recreation opportunities. Variety and quality of the roadless recreation setting would be high. Roaded recreation opportunities would be restricted by the road management program.

Under Alternative 17, the visual quality of the Forest would be improved over the existing situation. Potential visual quality objectives are met in highly critical areas and important recreational areas. Some visual quality nonpriced benefits were traded off in favor of big-game winter range and priced cash benefits in Alternative 17 after considering public comments on the Draft.

Alternative 17 would improve the existing quality of big-game hunting over time. Access would be managed at approximately current levels as the roads needed for management are constructed and managed to meet management objectives. Roadless dispersed recreation land designations and an aggressive road management program will provide security from human disturbance for big game and an unroaded hunting environment. Management of over 95 percent of the potential winter ranges to improve forage production would increase potential elk, mule deer, and whitetailed deer populations over time. Increased big-game numbers could provide improved hunter opportunities.

This alternative would provide potential elk, mule deer, and whitetailed deer habitat at 80 percent of maximum potential by Decade 5. Important fisheries streams would be managed to protect and improve fisheries habitat. About 99,000 acres of the Forest would be managed to improve grizzly bear habitat as the primary emphasis. This includes a 77,000 acre Trail Creek Grizzly Bear Management Area recommended for special area classification in the north end of the Glacier View Ranger District. This area was removed from the suitable timber base and expanded after considering public comment on the Draft. This would contribute to grizzly bear and gray wolf recovery, and helps to achieve a 205-bear habitat potential. Land use patterns combined with habitat and road management practices will provide a desirable mix of wildlife resources on a sustained yield basis.

Alternative 17 would meet the intent of the Grizzly Bear Recovery Plan through a mix of land designations and management objectives that would protect grizzly bear habitat and provide the opportunity to attain a recovered population. Within the Trail Creek Grizzly Bear Management Area a high proportion of the key productive grizzly bear habitat would be protected and managed to maintain and improve the important habitat components of the area. Security would be provided for grizzly bear and gray wolf populations.

Nongame species habitat is protected and enhanced in Alternative 17. The percentage of Forest lands contributing old growth and snag cavity habitat is high in comparison to other alternatives. Revised estimates of riparian habitat provide higher old-growth potentials in Alternative 17. Other types of habitat to support all nongame species would exist at moderate levels by the end of the fifth decade. Some areas would be managed specifically for nongame species.

Water quality would remain at existing levels. Risks associated with maintaining timber harvest at a level that would not cause unreasonable economic displacement are projected to increase. As a result of the geographic location of economically operable timber stands, timber harvests for Decades 1 and 2 must come from the same drainages as past timber harvest. Recognition of risk areas, attention to good project level management practice monitoring and mitigation measures will maintain desirable water quality.

The variety of plant communities would improve over the existing situation generally through timber harvest. Those acres on which roadless dispersed recreation opportunities are provided would advance to the later plant successional stages. Grizzly bear habitat would provide opportunities for use of fire in limited areas.

The first decade timber harvest level is 100 MMBF, (85 percent of Decade 1 RPA target), increasing by the fifth decade to 152 MMBF (91 percent of Decade 5 RPA target). The long-term sustained yield capacity of 149 MMBF/year is produced on 670,670 suitable acrs. The suitable acres were reduced from the Draft by increasing unsuitable land use designations in riparian areas. Trail Creek Grizzly Bear Management Area, and in some steep marginal timberlands after considering public comment and additional analysis on the Draft.

Economic stability would be promoted by Alternative 11, with management emphasis placed on the full array of resources significant to the local economy. Economic growth would be slow but spread throughout important industrial sectors.

This alternative would provide the best opportunities to maintain existing land use patterns and lifestyles. Local residents would be afforded access to the Forest, yet access restrictions would be sufficient to maintain a variety of settings for hunting, fishing, and other activities occurring in a forested environment. Some roadless environments would be maintained. Firewood would continue to be accessible. Wilderness resources and recreation opportunities would increase. Major public issues would be reasonably resolved and net public benefits maximized.

The Departure variation to Alternative 17 was considered, but found not to maximize net public benefits because the costs were high in relation to the priced (timber) and nonpriced (community stability) benefits produced. All resource relationships other than timber remain the same as Alternative 17 in the Departure variaton.

ALTERNATIVE 1

This alternative emphasizes maintenance and enhancement of prime grizzly bear habitat, existing roadless areas, nongame wildlife, old-growth habitat, and fisheries. Production of commodity resources such as timber and oil and gas is constrained by consideration of impacts on other resources.

a. Analysis of Constraints

PNV = $476,500,000
Change from PNV Benchmark = 129,000,000
Discounted Cost = $383,200,000

This alternative achieves a PNV of $476.5 MM, $129 MM less than the PNV Benchmark and $6.5 MM less than Alternative 17.

This PNV tradeoff is because Alternative 1 has low timber harvest levels, more timber harvest scheduling constraints compared to the other alternatives and the PNV Benchmark. This alternative also manages for a high level of "amenity values" which contribute little PNV.

In addition, the PNV is decreased by the costs associated with the grizzly bear management objectives, which apply to over 322,000 nonwilderness acres (about 25 percent of the nonwilderness land base). Timber harvest and prescribed burning would occur, but would be designed to maintain the desired mix of grizzly bear habitat components and cover/forage ratio. These constraints decrease timber management options and increase management costs. They also affect nonpriced public benefits by restricting public use to provide security. Noncash benefits are low. Recreation and hunting opportunities would be adversely affected in addition to the priced benefit reductions.

a. Net Public Benefits

Dispersed recreation opportunities in both the roaded and unroaded environment are moderate in the range of alternatives. The road management program would reduce the existing level of unrestricted road access to the Forest in order to achieve habitat objectives. The total number of roads on the Forest will double. Many of the existing unroaded areas are maintained in an unroaded state. Many roads will be closed to public motorized access after they have been used. Wildernesses are managed with higher levels of funding. This allows improved mitigation of the impacts of recreation use on the wilderness resource. No new wilderness is recommended.

Two of the important dispersed recreation settings on the Forest are managed under this alternative to achieve other "amenity value" objectives. The north end of Glacier View District and the Spotted Bear River are managed to maintain grizzly bear habitat. The Swan Mountain Range and Glacier Slough would be managed to provide dispersed recreation opportunities. Although this alternative does not overtly focus on providing recreation opportunities, the mix of other resource objectives and land designations throughout the Forest result in high roadless recreation setting quality and diversity. Roaded recreation opportunities would remain similar to existing or decrease slightly due to the restrictive road management program.

Under Alternative 1, a moderate proportion (61 percent) of the potential visual quality objectives would be retained, resulting in a Forest environment with good scenic qulaity. The majority of the visual quality is associated with land designations that do not permit timber harvesting.

Big-game management opportunities are restricted by other resource management objectives; therefore, potential wintering populations are fourth lowest of all the alternatives by the fifth decade. Similarly, nonwildernes permitted livestock grazing is reduced by other resource considerations to the lowest level of all the alternatives.

Under Alternative 1, big-game hunting quality would change slightly from the existing situation. The potential forage production for elk and deer populations is second lowest of all the alternatives. Grizzly bear habitat management objectives preclude achieving correct cover/forage relationships and high forage production on the potential elk and mule deer winter range on the Spotted Bear Ranger District. Amenity resource management objectives elsewhere on the Forest limit management opportunities on whitetailed deer winter range. Elk and deer populations would be relatively low by the third and fourth decades perhaps resulting in lowered hunting success opportunities. A restrictive road management program would decrease access slightly over existing levels. Therefore, nonmotorized hunting quality would remain high. High levels of security from human disturbance would be provided to big-game populations. Hunting season restrictions could be imposed in an effort to increase the big-game populations,* but the capacity of the habitat of the Forest would remain limited due to other management objectives.

The quality of grizzly bear and gray wolf habitat would increase under this alternative, providing the Forest's share of opportunities to meet and exceed the objectives for a recovered population of grizzly bears. This alternative would manage the most acres to improve grizzly bear habitat of all the alternatives and would have the fewest acres where management to meet other resource objectives would conflict with grizzly bear and gray wolf objectives.

The grizzly bear management provides habitat to support 215 bears. This habitat index indicates that this alternative has one of the highest potentials for the Forest to contribute to the Northern Continental Divide Ecoystem grizzly bear recovery goals.

At the end of the first and fifth decades, habitat to support snag cavity and old-growth dependent species would be highest of all the alternatives. Old growth would be protected by management objectives for grizzly bear habitat, dispersed recreation, and other amenity resources, including nongame species. Habitat for general forest users and tree dependent species would be similar to that provided by other alternatives.

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* The State of Montana has responsibility and authority for setting hunting seasons and limits.

Habitat to support grass forb and shrub users would be sufficient to meet viable population requirements but less than that provided under other alternatives. Habitats for other nongame species are generally provided to the same degree by all alternatives. This alternative would provide a high level of management emphasis focused on nongame species.

Water quality under Alternative 1 would remain relatively high over the first and second decades; however, localized adverse impacts on fisheries and water-based recreation opportunities could still occur. Water quality would remain higher than most other alternatives in the fifth decade. Alternatives 1 and 5 provide the least risk to quality over the next 50 years.

Over time, the variety of plant communities would be lower than most other alternatives. Where timber harvest was not scheduled, the Forest would advance to the later plant successional stages. Grizzly bear management habitat would provide opportunities to use fire to alter vegetative patterns. Generally, however, the high level of amenity resource land designations would lead to decreased variety over time.

Timber harvest levels are low compared to most of the other alternatives. First decade average annual timber harvest is 82 MMBF (69 percent of Decade 1 RPA target), and Decade 5 is projected to be 151 MMBF (90 percent of RPA by Decade 5). The long-term sustained yield of 154 MMBF, is produced on 673,045 suitable acres.

Employment opportunities decline in the first decade, particularly in the wood products industry. Potential employment associated with recreation opportunities, especially those associated with hunting and fishing, partially offset the decline in economic stability that would result from decreased timber harvest levels.

Local residents' access to the Forest would decrease even though more roads would be constructed over time. Recreation opportunities would be provided throughout the Forest, but the north end of the Glacier View Ranger District and Spotted Bear Ranger District could become more restrictive over time due to grizzly bear management objectives. Firewood gathering opportunities would be slightly less than current due to reduced timber harvest levels and restrictive access. Hunting quality could be impacted. This alternative would result in significantly changed relationships to the Forest. This could impact existing land-use patterns and lifestyles.

ALTERNATIVE 16

This alternative focuses on "amenity resources" while designating 76 percent of existing roadless lands as wilderness. It emphasizes management of prime grizzly bear habitat in nonwilderness areas through access restrictions, prescribed burning, and some carefully designated timber harvest to maintain the best relationship of cover to forage. The gray wolf population also is expected to increase in this alternative due to the extensive security provided by the grizzly habitat emphasis in the nonwilderness portion of the Forest along with approximately 373,800 acres of new wilderness.

a. Analysis of Constraints

PNV = $466,800,000
Change from PNV Benchmark = $138,700,000
Discounted Cost = $335,400,000

Alternative 16 achieves a PNV of $466.8 MM, 138.7 million dollars lower than the PNV Benchmark and $9.7 MM lower than Alternative 1. This alternative further reduces recreation carrying capacity and reduces the suitable timber base from Alternative 1, thus reducing PNV.

Alternative 16 has the second lowest discounted costs. This low level of investment resulted in the lowest discounted benefits, thus giving Alternative 16 the lowest PNV of all the alternatives. Priced benefits are traded off for nonpriced benefits primarily in nonrecreation wilderness values and threatened and endangered species habitat. Noncash priced benefits are also low.

b. Net Public Benefits

In the range of alternatives considered, Alternative 16 provides the best opportunities to contribute to recovered population of grizzly bears, high quality water, quality recreational fisheries, and the third highest number of acres in old growth. This alternative allows livestock grazing at low levels and has the second lowest long-term sustained yield capacity.

Nearly all the high quality roadless recreation areas would be recommended for wilderness. Only the Le Beau area would provide for a primitive recreation opportunity outside wilderness. Semiprimitive nonmotorized and semiprimitive motorized opportunities would be very restricted.

Alternative 16 has a small amount of total area designated as the visual quality objectives of retention or partial retention. All critical viewing areas are protected, however, either through specific designations for visual quality or through wilderness or roadless designations.

Alternative 16 provides the second highest potential to meet wilderness use needs by providing a potential of 432 MRVD's/year; 53 percent of projected Decade 5 use. Roadless dispersed recreation potential of 112 MRVD's/year can accommodate 30 percent of projected Decade 5 use. Roaded natural-appearing dispersed recreation potential of 1010 MRVD's/year meets 82 percent of projected Decade 5 use. More funding is available for management of the wilderness resource to allow for protection and mitigation of the impacts associated with recreational use. Trail maintenance and visitor information are improved. For similar reasons, the Flathead Wild and Scenic River, campgrounds and picnic areas are managed with higher funding levels.

Alternative 16 recommends all Forest inventoried roadless areas for wilderness except the Le Beau, Standard Peak, Coal Ridge, Swan Island, part of the Middle Fork Flathead adjacent to the Lewis and Clark National Forest, and the lower elevation fringe areas of the Swan Crest. This includes all roadless areas except the areas having the least public support and the lowest wilderness values for wilderness recommendation. Most of the nonrecreation wilderness values are preserved and only Alternative 9 would provide more than this alternative.

Big-game populations are of concern in this alternative; however, opportunities to manipulate the vegetation to achieve the desired cover/forage ratio are limited by conflicts in some areas with management of grizzly bear habitat and with wilderness designations. Thus, the Forest's potential to support big-game populations is reduced, and is second lowest of all the alternatives by the fifth decade.

Alternative 16 would have the highest security for big-game animals of all alternatives. This is a result of high wilderness designations along with maximum access restrictions due to grizzly bear emphasis; however, due to the small percentage of potential winter range that is managed as winter range, potential for deer and elk habitat production by Decade 5 is lowest of all alternatives. Natural succession in wilderness winter range would reduce forage production.

Acres of threatened and endangered species habitat are highest of all alternatives. A substantial number of acres of Management Situation 1 habitat outside wilderness designations are managed to emphasize grizzly bear and gray wolf habitat. Alternatives 1 and 16 provide the highest potential for grizzly bear population density of all the alternatives.

Acres of habitat needed to support snag cavity and old growth dependent wildlife species would be very high. Old growth is preserved through roadless, wilderness, amenity values, and riparian designations.

Only Alternative 10 has lower potential for plant and animal diverstiy. The amount of land is limited in which timber harvest and fire is used to introduce and maintain vegetation variety.

Water quality would be improved over current levels due to reductions in timber timber harvest and associated road construction and maintenance activities. Alternative 16 offers a low potential to negatively affect long-term water quality.

Commodity resource development is not highlighted in this alternative. Timber harvest provides an annual harvest of 71 MMBF/year in the first decade (60 percent of the Decade 1 RPA target), and rises to 124 MMBF/year (74 percent of RPA by Decade 5). The harvest level results from primary consideration being given to amenity resources including wilderness. The long-term sustained yield capacity (135.0 MMBF/year) is produced on 673,045 suitable acres of timberland. Permitted domestic livestock use is similar to Alternative 1. Oil and gas exploration and development generally is permitted throughout the nonwilderness portion of the Forest but is subject to numerous stipulations designed to protect the surface resource values.

Economic stability would be adversely affected in Decade 1 due to substantial reductions in timber harvest levels. Potential employment associated with wilderness, recreation, and threatened and endangered species would not offset the employment and income provided by the woods products industry.

As a result of economic and land use changes in Alternative 16, local lifestyles would be affected. Firewood and other activities, such as berry picking, trail bike riding, and snowmobiling would be significantly reduced from current levels.

III. Affected Environment

This chapter describes the environment that may be changed by the implementation of the Preferred Alternative or alternative plans considered. This description is presented in two sections. Section A describes the physical, biological, social, and economic settings and Section B describes the Forest's current resource situation. Most of the resource discussion focuses on the nonwilderness portion of the Forest.

A. PHYSICAL, BIOLOGICAL, SOCIAL, AND ECONOMIC SETTINGS

1. GENERAL SETTING

The Flathead National Forest is located in northwestern Montana in the Rocky Mountain Province. Bedrock is mostly meta-sedimentary argillites, quartzites, and limestones that are Precambrian in age.

All of the major landforms are structurally controlled with most of the mountain ranges being formed by block faults. The western-most range is folded and faulted. Glaciation from the last ice age influenced the shape of the land as well as the composition of the soil.

Soils are young in age and silty in texture. The Forest has a volcanic ash surface mantle that ranges from 4 to 8 inches thick. This ash mantle has considerable influence on site productivity.

Over 270,000 acres of State of Montana and private land are within the Flathead National Forest boundary. These include checkerboard sections of Plum Creek Timber Company, Inc., Glacier Park Company lands (primarily in the southern portion of the Forest), two State forests, State lands, and scattered small private tracts.*

Congress has designated over one million acres of the Flathead National Forest as part of the National Wilderness Preservation System: The Bob Marshall, Great Bear, and Mission Mountains Wildernesses comprise approximately 46 percent of the Forest's total land base. Other designated special management areas are the Flathead Wild and Scenic River, Jewel Basin Hiking Area, and Coram Experimental Forest. The Big Mountain Winter Sports Area operates under a special-use permit.

The Forest is in portions of six counties--Flathead, Lake, Lewis and Clark, Lincoln, Missoula, and Powell. Table III-1 shows Flathead National Forest area by county as it existed in 1980.*

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* For more detailed information, see the "Land Status Records - Flathead National Forest," Supervisor's Office, Kalispell, Montana.

TABLE III-1 Flathead National Forest Area by County

County	Flathead NF Acres	% of Total County Area	% of Flathead NF Area
Flathead	1,715,168	51.0%	73.0%
Lake	156,943	14.8%	6.7%
Missoula	167,810	10.0%	7.1%
Lincoln	15,805	0.5%	0.7%
Powell	253,390	17.0%	10.8%
Lewis & Clark	40,818	1.8%	1.7%

2. PHYSICAL SETTING

a. Topography

The Forest's terrain typifies that of glaciated lands, with high alpine basins and broad U-shaped valleys. Evidence indicates that all three types of glaciation--continental, alpine, and valley--occurred here. Nearly half of the nonwilderness land base is classified as "breaklands," with greater than 60 percent slopes.

Slope classes on the nonwilderness portion of the Forest are:

Class	Percent Slope	Percent of Area
Gentle	Under 40	39.2
Moderate/Steep	40 to 60	15.4
Very steep	Over 60	45.4

Source: Forest Plan data base.

The opportunities for and consequences of Forest management are greatly influenced by slope. Generally, lands with gentle slopes are low in elevation and have a long growing season. These are the most productive for many resources including recreation, wildlife, and timber. They are the least costly to manage, allow the greatest range of management practices, and offer the widest range of management opportunities with the lowest potential to adversely affect other values. As slopes increase, management costs escalate, the potential for adverse impacts increases, and the range of management practices becomes restricted.

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* Total Flathead National Forest acres used for the analysis are drawn from the 1978 Land Status Records. Land adjustments slightly alter total Flathead National Forest acres every year.

b. Precipitation

The weather is cool and maritime influenced. Precipitation ranges from 16 inches in the valley bottoms to more than 100 inches on the mountain tops. On the valley bottoms about half of the annual precipitation falls as snow. Up to 80 percent of the precipitation at the higher elevations is snow. Valley bottoms are about 3,000 feet above sea level. The highest mountain peaks are just under 10,000 feet above sea level.

c. Visual Setting

About 40 percent of the Forest outside wilderness is adjacent to or readily visible from major highways or roads, recreational routes and use areas, or residential private land; and thus very sensitive to management activities which disturb the natural landscape. Slope, season of year, existing vegetation conditions, and soil color also influence the ability of the natural landscape to absorb surface-disturbing impacts.

3. BIOLOGICAL SETTING

This section describes general vegetative categories on the Forest and threatened and endangered plants. Wildlife species are discussed later in this chapter.

a. Vegetation

The Forest's terrain typifies that of glaciated lands, with high alpine ridges and basins and broad U-shaped valleys. Evidence indicates that all three types of glaciation--continental, alpine, and valley--occurred here. Nearly half of the nonwilderness land base is classified as "breaklands," with greater than 60 percent slopes.

Elevation, precipitation, and temperature extremes coupled with the area's interesting geologic history have resulted in diverse plant communities that support a wide variety of plant and animal life. The Forest has most of the habitat types common to western Montana, with the subalpine fir series as the dominant habitat type. The range is from the warm-dry ponderosa pine/bunchgrass to the cool-moist whitebark pine types. Most of the land below 7,000 feet in elevation is capable of supporting tree cover, although localized topographic, climatic, and edaphic conditions cause occasional exceptions such as bogs and wet meadows, dry meadows, shrub fields, talus, rock outcrops, and avalanche chutes.

The existing vegetation shows the influence of fire. Extensive stands of lodgepole pine are most prevalent over the northern half of the Forest. Many of these stands are highly susceptible to infestations of mountain pine beetle. Fire's influence further manifests itself in vegetative mosaics, affecting species composition, age class, and life form.

There are eight vegetative groups on the Forest (On and Losensky, 1976):

Group	Characteristics
1. Warm and dry	Open stands of ponderosa pine or Douglas-fir with bunchgrass in the understory. Normally found at lower elevations on southern slopes.
2. Moderately warm and dry	Mixed Douglas-fir and ponderosa pine with a shrub and pinegrass understory. Found on all aspects at lower elevations.
3. Moderately cool and dry	Douglas-fir is dominant, but there is some ponderosa pine, lodgepole pine, and grand fir. The understory is beargrass and huckleberry, and pinegrass on ridges or dry south slopes.
4. Cool and moderately dry	All aspects from 5,000 to 6,800 feet. Pure stands of lodgepole pine are most common. Subalpine fir, Engelmann spruce, and Douglas-fir on moister sites. Beargrass, huckleberry, and grouse whortleberry are understory species.
5. Moderately cool and moist	Stands vary from pure spruce to Douglas-fir, larch, grand fir, and lodgepole pine mixtures. Found on northerly slopes, stream bottoms, and lower southern slopes.
6. Cool and moist	Stands are Douglas-fir, lodgepole pine, larch, subalpine fir, and spruce. Occur on moist northerly slopes, streambottoms, and moist benches.
7. Wet	Subalpine fir, spruce, Douglas-fir, and lodgepole pine in poorly drained soils in streamside zones, wet benches, and the heads of drainages.
8. Cold and moderately dry	All aspects from 6,800 to 9,600 feet. Lodgepole pine at lower portions and whitebark pine and subalpine fir at higher. Some Engelmann spruce and alpine larch.

At this time no plants have been classified as threatened or endangered within the boundaries of the Forest.

4. SOCIAL AND ECONOMIC SETTING

While the Forest provides resources to the Region and to the Nation, the local zone of influence includes three western Montana counties - Flathead, Lake, and Missoula. This zone of influence encompasses those people who depend on the Forest resources and who use it on a regular basis. Approximately 140,000 people live in this area. Major communities include Kalispell, Columbia Falls, Whitefish, Polson, and Missoula.

a. Population

The three counties that make up the Forest's zone of influence have experienced rapid population growth in the last 10 to 20 years. Growth rates of about 30 percent during the 1970's imply high levels of in-migration as newcomers are attracted to the western Montana area. By comparison, Montana's total population only increased about 13 percent during the 1970's.

More local residents mean more people are turning to the Flathead National Forest for recreation, firewood, hunting and fishing, and so on. In fact, recreation data for the Forest indicate use is increasing slightly more rapidly than population growth.

In addition to simply more people in the area, census information indicates that people are spreading throughout the Forest's zone of influence. The rural areas have experienced the greatest increases in population as private agricultural and forested lands are subdivided. More people are living in close proximity to National Forest lands and are directly impacted by management activities.

b. Economy

Total employment opportunities in the Forest's zone of influence increased between 26 percent (Lake County) and 37 percent (Flathead County) in the 1970's with the majority of the growth being in the retail trade and service sectors, which include tourism-oriented businesses. Wood products, manufacturing, tourism, Government and, to lesser extents, agriculture and the railroad are the areas of economic activity that have historically been the major determinants of growth for the area.

In spite of high growth rates, unemployment remains among the highest in Montana due to the seasonality of the wood products and tourism-oriented businesses as well as the significant levels of in-migration and the large student population in Missoula.

The Forest's influence on area employment is through its production of goods and services. Several important economic sectors depend to some degree or another on National Forest resources. These sectors include the timber and recreation industries.

c. Lifestyles

The majority of residents in the three county area appear to believe that the natural environment contributes significantly to the quality of life in the area. A recent survey in Flathead County indicated that most residents chose to live here for reasons other than job opportunities--the clean environment, recreational opportunities, and the size of their community were most frequently cited. Available information indicates that area residents want to maintain the high quality environment that attracts them here.

The Flathead National Forest, through its management objectives and activities, has a high potential for affecting the quality of the environment. Potential conflicts are obvious. The economics of the zone of influence are heavily dependent upon the development of natural resources. Yet these same natural resources provide people living here with the quality that they perceive and want in their lives. Most people agree that some resource development is compatible with maintaining a quality natural environment but the questions of "how much" and "where" have area residents disagreeing.

The relationships between National Forest System lands and resources and people differ, depending on a number of variables. One variable is where people live. Within the boundaries of the zone of influence are numerous distinct communities with varying mixes of lifestyles, occupations, land-use patterns and concerns about land management. The potential impacts of Forest management objectives and activities differ from community to community. Descriptive sketches of the local "community units" are included in Appendix B, Chapter V and not repeated here.

Relationships to the Forest vary based on the length of time individuals have resided in the zone of influence. Native and long-time residents' perceptions of their environment are at least in part structured by their memories of life in the area prior to the recent changes that have occurred. An agricultural and rural lifestyle was the tradition for the area. Hunting and fishing were pursued more for subsistence than as recreational activities. Timber production was the most obvious use of the Forest; recreation opportunities were abundant and taken for granted.

Long-time residents have seen a lot of changes occur, as newcomers have arrived, not looking for jobs as much as for a new way of life. New arrivals bring diverse lifestyles and values to the area. Their perceptions of the environment are based on comparisons with where they came from. Change is often seen as change from what attracted them here in the first place.

d. Forest Receipts

Forest receipts come primarily from the sale of timber, but also from grazing permits, mineral leases, special use permits, and campground fees. Twenty-five percent of the gross receipts are returned to state and local governments. Much of the fluctuation in receipts is due to cyclical timber harvests.

Forest receipts in 1978 dollars were:

Dollars	Year
$ 4.927 MM	1978
4.620 MM	1979
4.254 MM	1980
3.876 MM	1981
1.008 MM	1982
0.424 MM	1983

e. Forest Service Employment and Budget

The Forest maintains a Supervisor's Office in Kalispell, Montana and Ranger District Offices in Whitefish, Columbia Falls, Hungry Horse, and Bigfork, Montana.

Employment in work-years was 458 in 1981, 431 in 1982, and 400 in 1983. The average annual budget for 1980-83 was $13.72 million (1978 dollars).

In 1983, the annual budget allocations were:

Activity	Percent of Budget	Amount (MM$)
Timber management	31	5.49
Road building & maintenance	20	3.56
Fixed costs, including administration and fire	40	7.08
Recreation, wildlife, minerals, soil, and water	9	1.44
		17.57

Source: Forest budget records.

f. Forest Related Employment and Income

A major way that forest management affects the local community is through its impact on employment. The Forest influences the wood products, government, construction and recreation service sectors. Indirect impacts are produced as those sectors transact additional business with other sectors. Induced impacts are produced when employees and proprietors of the affected sectors spend their additional income. The impacts of the Forest on local employment and income in 1980 are shown in Table III-2.

TABLE III-2 Contributions To Local Employment and Income in 1980 - Flathead National Forest

Economic Sector	Income		Employment	
	Total $(MM)	Forest Output Contribution ($MM)	Total Jobs	Forest Output Contribution Jobs
Misc. Agriculture	3.82	.30	546	43
Meat Animals, Misc. Livestock	.62	.05	146	12
Metal Mining	1.50	.00	93	0
Misc. Mining	.54	.00	22	0
New Construction	33.75	1.04	2,080	64
Maintenance and Repair	18.05	1.21	686	46
Misc. Manufacturing	38.97	.69	1,981	35
Food and Kindred Products	8.50	.69	588	48
Logging and Sawmills	41.53	5.63	2,706	367
Other Wood Products	7.51	.25	693	23
Veneer and Plywood	33.09	2.16	2,229	145
Pulp, Paper, and Paperboard	7.96	1.90	418	100
Transportation and Communication	57.08	3.01	3,380	178
Wholesale and Retail Trade	85.23	7.35	3,844	763
Insurance and Real Estate	22.42	1.61	1,762	127
Hotels and Lodging Places	4.12	1.16	914	257
Miscellaneous Services	64.53	5.60	7,195	625
Eating and Drinking Places	20.34	2.08	2,968	303
Government Enterprises	11.79	.42	757	27
Scrap, Used and Secondhand	.00	.00	0	0
Total	461.35	35.15	38,008	3163

Population = 132,041

In 1980, an estimated 3,163 jobs in the area of influence were associated with Flathead National Forest activities. The employment generated 35 million dollars in personal income, or 7.6 percent of the total income in the area of influence. Twenty percent of the employment generated by the Forest is associated with harvesting, hauling, and manufacturing timber products.

More recent data in 1983 show that for Flathead County alone, total employment was 18,328 jobs.* Of this, 2,014 jobs were related to the harvesting, hauling, and manufacturing of wood products. In 1983, 265 MMBF were processed in Flathead County; thus, in 1983 about 7.6 direct jobs resulted from every 1 MMBF processed (Note that this is within 10 percent of the number predicted by the input-output model discussed in Chapter IV, Table IV-17). With local timber supplies from the Flathead National Forest being anywhere from 30 to 50 percent of the total processed in Flathead County (see CURRENT RESOURCE SITUATION, Timber, this chapter), 600 to 1,000 direct jobs would result from this supply, or about 3.3 to 5 percent of the total employment in Flathead County. Considering indirect and induced impacts of harvesting activities, total employment resulting from timber harvesting would be from 1,300 to 2,200 jobs, or 7 to 12 percent of the total employment in Flathead County.

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* Regional Economic Information System, Department of Commerce.

Timber-related employment and demand for timber are also discussed in Chapters II, National, Regional, and Local Demand Outlook, and Chapter IV, Timber Harvest - Social and Economic Environmental Consequences.

B. CURRENT RESOURCE SITUATION

1. RECREATION*

The Montana SCORP (State Comprehensive Outdoor Recreation Plan) identifies the public, private, and nonprofit nonurban developed recreation sites. Within Flathead, Lake, and Missoula Counties, in 1978, there were roughly 3,000 camp and picnic units of varying degrees of development available to the public for daily fees that varied from $2 to $5. Finally, there are outdoor recreation sites in some of the local communities - parks, baseball fields, tennis courts, and so on.

This overview of recreation "supply" indicates what the Flathead National Forest has to offer and sets it in the context of total recreation supply in the Forest's zone of influence.

The Flathead National Forest is an integral part of the local area's recreational environment, which also includes Glacier National Park, the Flathead River System, Flathead Lake, and the Big Mountain Winter Sports Area. Because of these attractions, the Flathead zone of influence has become an important destination recreation site for Americans and Canadians. In addition, the growing local population places user pressure on the area's recreational settings. In 1979 a majority of area residents went camping, fishing, picnicking, driving, and walking for pleasure, or swimming outdoors at least once. These are the sort of activities for which the National Forest System lands are particularly suitable.

In 1980 recreation use on the Flathead National Forest was about one million RVD's (recreation visitor days)**, 25 percent over 1978 and about 100 percent above use in the early 1970's. The largest portion of the Forest's use occurred in the dispersed Forest areas (54 percent), while 31 percent of the use was at developed recreation sites, and 15 percent occurred in the wildernesses.

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* For more information, see The Flathead National Forest Recreation Consumption Forecast, August 1981, in the Forest planning records.

** Recreation visitor day is defined in the Glossary

a. Developed Recreation

Under special-use permits the Flathead National Forest administers 67 summer home sites and six resorts, including The Big Mountain Winter Sports Area (see page III-13). Use at private facilities totaled about 118,850 recreation visitor days in 1980, with the vast majority of that use occurring at The Big Mountain. Use of private summer homes and resorts excluding The Big Mountain is about 15 percent of what these areas could provide if used to capacity.

Public developed sites on National Forest System land include 28 campgrounds and picnic areas. Additional developed site facilities include boat ramps, swimming areas, and trailhead facilities. Public site actual use in 1980 was 170,500 RVD's. This level of use is about 65 percent of potential use levels, indicating that use is relatively high but not in excess of Forest-wide capacity. Use at public developed sites varies widely between Ranger Districts and between sites; thus, some specific sites may be used at or in excess of capacity while others are infrequently used.

Almost half of the Forest's public campgrounds and picnic areas are clustered around the Hungry Horse Reservoir. The remainder are scattered throughout the Forest with most located on rivers or lakes. All but two of the public campgrounds and picnic areas are currently operating at a reduced service level, and in some cases limited funding has resulted in maintenance that does not even meet reduced service level standards. At some of the more heavily used sites, current facility maintenance does not always keep up with normal wear and tear, resulting in site and facility damage.

Developed site recreation visitor day capacity provided by existing public and private facilities (1,031,000 RVD's) on the Flathead National Forest exceeds the Forest's RPA objectives through the year 2030. Assuming that the Flathead National Forest will continue to provide the same proportion of developed recreation use as it did in 1980, that the National Forest System's land base will remain constant, and that increases in developed recreation will be proportional to population increases in the Forest's zone of influence, developed recreation demand or use will increase 30 percent from 1980 to 1990 to about 375,000 RVD's, and increase to about 730,000 RVD's by the year 2025. Much of this increase in participation at developed sites will come from downhill skiing; however, increases in use of public campgrounds and picnic areas are also expected.

b. Dispersed Recreation

Of the Forest's approximately 500,500 RVD's of use in nonwilderness dispersed recreation areas in 1980, about 77 percent occurred in a roaded environment (including activities such as berrypicking, snowmobiling, fishing, hunting, driving for pleasure, and roadside camping) while 23 percent occurred in an unroaded environment including backpacking, hiking, fishing, hunting, and so on. Use is unevenly distributed across the Ranger Districts.

Assuming that the Forest will continue to provide the same proportion of roaded and roadless dispersed recreation opportunities that it did in 1980 and that the National Forest System's land base will remain the same, projected increases in dispersed recreation use are as follows:

	Roaded RVD's	Roadless RVD's
1980	437,000	131,000
1990	583,000	174,000
2000	762,000	228,000
2010	944,000	283,000
2020	1,250,000	368,000

Dispersed recreation opportunities in the existing unroaded environment are not being fully realized. Limited funding has led to deteriorated and inadequate trailhead facilities, inadequate trail signing, and a low level of trail maintenance. In a 1980 survey of the trail system based on the Northern Region's accessibility criteria, only 43 percent of the trail system was adequate. These factors limit capacity. Thus while 412,000 acres could provide unroaded recreation opportunities, actual opportunities are low.

RPA objectives for dispersed recreation opportunities on the Flathead National Forest appear to be conservative, given existing projected use. By the year 2030, the Forest is expected to provide the capacity to absorb 774,000 RVD's of both roaded and roadless dispersed recreation use while projected use exceeds that level by 1995.

c. Recreation Settings

The Recreation Opportunity Spectrum system is used to evaluate the recreation potential of the Forest. This system defines five types of recreational settings ranging from primitive, where human disturbance is minimal to rural, where roads and users are concentrated. The primitive setting applies to wilderness areas. The percent of current recreation settings on the Forest outside wilderness is:

Primitive	5 percent
Semiprimitive nonmotorized	15 percent
Semiprimitive motorized	9 percent
Roaded natural	71 percent
Rural	0 percent

Source: Forest Plan data base.

Since 46 percent of the Forest is wilderness and closed to motorized vehicles, most of the remaining roadless areas suitable for off-road vehicles (semiprimitive motorized) do not have restrictions on motorized travel. Motorized travel is prevented by topographic and vegetative features or lack of trails on lands in the semiprimitive nonmotorized category.

d. Recreation Trails

Access in the Forest is provided by 2,146 miles of trails, with 1,244 miles in wilderness and 902 miles outside wilderness. There are nine National Recreation Trails and part of the Continental Divide Scenic Trail on the Forest. On the trails outside wilderness, about 75 percent are open to all uses, 25 percent have restrictions on motorized use, and 5 percent are closed to stock use. About 35 percent of the trail system is in poor condition requiring extensive reconstruction or relocation. The poor condition results from poor location and/or user impacts. In the past few years, about 9 miles of trail have been constructed or reconstructed annually.

Trail miles by maintenance category are:

Category	Wilderness Miles	Nonwilderness Miles
Custodial care only	271	416
Tread maintained	319	231
Tread maintained, trailside brushed	443	239
High standard maintenance	211	16

2. WILDERNESS, ROADLESS, AND SPECIAL AREAS

Specially designated areas of Flathead National Forest contribute substantial recreation opportunities. The Flathead National Forest administers all of the Mission Mountains and Great Bear Wildernesses and about 70 percent of the Bob Marshall Wilderness. These areas comprise about 5 percent of the National Wilderness Preservation System in the lower 48 States and about 46 percent of the Forest's land base.

The three wildernesses provided 137,000 RVD's of use in 1980. Assuming that the Flathead National Forest will continue to provide the same proportion of wilderness recreation demand that it did in

1980, wilderness use is predicted to double by 1995 and quadruple by 2025. Based on these assumptions, demand for wilderness recreation will exceed the capacity of the wildernesses by the year 2000.

a. The Flathead Wild and Scenic River System

The three forks of the Flathead River classified under the Wild and Scenic River Act consist of two wild segments, three recreational segments, and one scenic segment, totaling 219 miles of classified river. Total use of the designated portions of the Flathead River has increased roughly 77 percent since 1977. Currently ten river outfitters operate on the river under special-use permits. Management of the Flathead Wild and Scenic River is guided by a management plan developed in conjunction with Glacier National Park and the State of Montana and completed in 1980. Management responsibilities are shared with Glacier National Park. Existing management is directed toward mitigation of resource damage on a priority basis, as funding permits.

b. Jewel Basin Hiking Area

Jewel Basin was classified by the Regional Forester as a Special Roadless Area in 1970. The 15,000 acres have been managed to provide roadless backcountry hiking opportunities. Motorized use and horse travel have been prohibited. Hiking use of Jewel Basin has increased 500 percent from 1970 to 1980, in spite of relatively poor access. Funding for management of the area has been low, resulting in limited trail maintenance, adverse site impacts, and violations of restrictions on motorized and horse use.

c. The Big Mountain Winter Sports Area

This ski area currently ranks first in skier visits of all ski areas in the Northern Region of the Forest Service. Skier visits during the winter of 1980-81 totaled 209,000. Over half this use was Canadian. The Big Mountain operates under a special-use permit, and management and development are guided by a Master Plan, recently revised in 1984.

d. Mission Mountains Wilderness

The Mission Mountains Wilderness (73,877 acres) is located on the east side of the Mission Mountain Range. On the west side is The Confederated Salish and Kootenai Tribal Wilderness, recently designated for preservation. The majority of recreationists in the Mission Mountains are drawn from the Forest's zone of influence. About 97 percent of the use is on foot and the length of stay averages 1.7 calendar days. Heavy recreational traffic in two drainages where lakes are only a short hike in from the road have necessitated area closures to forestall further resource damage. Although portions of the wilderness are heavily used, other areas are rarely visited. Recreation use has been stable for several years, with about 15,000 RVD's of use per year.

The Mission Mountains Wilderness provides habitat for small populations of grizzly bears and mountain goats, as well as other wildlife. Timber harvest on National Forest System and Burlington Northern Timberlands Inc. lands that flank the wilderness has provided road access close to the wilderness boundary.

e. Great Bear and Bob Marshall Wildernesses

The Bob Marshall and Great Bear Wildernesses are considered part of a contiguous three wilderness complex that includes these two areas, managed by the Flathead National Forest, as well as the remainder of the Bob Marshall managed by the Lewis and Clark National Forest and the Scapegoat Wilderness managed by the Helena and Lolo National Forests. The Bob Marshall Complex is the second largest contiguous wilderness in the continental United States and Flathead National Forest manages 65 percent of it--286,700 acres as the Great Bear Wilderness and 709,356 acres as the Bob Marshall Wilderness.

In contrast to the Mission Mountains, the Great Bear and Bob Marshall attract more out-of-State visitors, particularly in the fall during hunting season when use is heavy. Length of stay averages nearly 5 calendar days in the Great Bear and about 5.7 calendar days in the Bob Marshall. Horseback traffic accounts for about half of the use of these areas. The Great Bear receives less recreational use currently but visitor days have been rapidly increasing to 23,000 RVD's in 1980. The Bob Marshall receives very heavy traffic along the South Fork corridor and through Holland Pass, but use in other portions of the wilderness is comparatively light. Total recreation visitor days in the Flathead National Forest's portion of the Bob Marshall in 1980 were 94,000. The concentrated use in the Bob Marshall has led to resource degradation in certain areas as evidenced by overgrazing, worn trails, bare ground, and damaged trees.

About 50 outfitters operate in the Flathead National Forest portion of the Bob Marshall and in the Great Bear and Mission Mountains Wildernesses. At this time, the number of special-use permits for outfitters is held constant pending completion of the Forest Plan and wilderness carrying capacity studies.

f. Roadless Areas

The Forest has approximately 495,000 acres of inventoried roadless lands that qualify for inclusion into the National Wilderness Preservation System. Further Analysis was based on:

1.) The demand for wilderness designation of the area.

2.) Present established use. (See Appendix C, individual roadless area write-ups.)

3.) Other resource needs for the area (i.e., Threatened and Endangered Species, Timber, Dispersed Recreation, and Minerals).

4.) The wilderness attributes of each roadless area (See Appendix C, individual roadless area write-ups).

5.) The beneficial environmental values of wilderness designation (See Appendix C, individual roadless area write-ups).

Quantifiable resource values found on the roadless areas of the Flathead National Forest and adjacent roadless areas are summarized in Table III-3.

The Flathead nonwilderness roadless areas meet the definition of wilderness stated by Congress. They provide the potential for meeting some of the National, Regional, and Forest wilderness need because of the opportunity for solitude, primitive recreation, natural integrity, and outstanding scenery and appearance. They also contain ecological and other features of particular scientific and scenic value, within a relatively intact ecosystem.

Following are summaries that include the qualitative values of these areas.

Thompson Seton and Tuchuck - These roadless areas are managed by the Flathead and Kootenai National Forests. The Flathead portion contains part of the eastern half of the Whitefish Range. Several roaded drainages form intrusions into the areas in the lower elevations. Primarily these roadless areas consist of broad ridges between drainages and rugged peaks.

These areas include some of the finest grizzly bear habitat in the United States and are also important fisheries for bull trout.

Much of the resource potential for Thompson Seton and Tuchuck roadless areas centers around high oil and gas potential.

The areas are extremely remote and have limited access, which has resulted in light use by recreationists. This remoteness, along with extensive trails into these areas, provides opportunity for solitude and primitive recreation. The Ralph Thayer Recreation Trail terminates at the Red Meadow Road on the southern boundary of the Thompson Seton roadless area.

TABLE III-3 Acres of Selected Resources by Roadless Area - Flathead National Forest

RDLESS AREA NAME	RDLESS NO.	ACRES		SELECTED RESOURCE ACRES 1/			
		NET	GROSS	TIMBER 4/	RANGE 4/	MINERALS 2/	WILDLIFE 3/
Mt. Hefty	01481	13,720	13,720	8,564	0	13,720	13,720
Tuchuck	01482	19,820	19,820	7,442	0	19,820	19,820
Kootenai NF	Portion	2,300	2,300	2,000	0	2,300	2,300
Flathead NF	Portion	17,520	17,520	5,442	0	17,520	17,520
Thompson-Seton	01483	71,750	71,750	18,990	0	71,750	71,750
Kootenai NF	Portion	19,100	19,100	4,700	0	19,100	19,100
Flathead NF	Portion	52,650	52,650	14,290	0	52,650	52,650
Le Beau	01507	6,210	6,210	5,786	0	6,210	0
Kootenai NF	Portion	800	800	800	0	800	0
Flathead NF	Portion	5,410	5,410	4,986	0	5,410	0
Benchmark	X1126	6,490	6,490	1,439	0	6,490	6,490
Coal Ridge	X1127	16,480	16,480	4,374	0	16,480	16,480
Deadhorse Ridge	X1127	23,550	23,550	8,178	0	23,550	23,550
Standard Peak	X1129	7,770	7,770	2,991	0	7,770	7,770
Swan River Island	L1FAA	550	530	142	0	550	550
Mission							
Addition 1	01500	960	960	411	0	960	960
Addition 2	01501	360	360	170	0	360	360
Addition 3	01502	640	640	590	0	640	640
Addition 4	01503	40	40	40	0	40	40
Addition 5	01504	150	150	150	0	150	150
Addition 6	01505	80	80	80	0	80	80
Addition 7	01506	110	110	110	0	110	110
Bear-Marshall-Scapegoat-Swan	01485	863,781	864,933	276,228	35,597	861,875	838,527
Lewis and Clark NF Portion		336,628	336,688	61,286	29,976	336,628	336,628
Helena NF Portion		57,303	57,355	38,608	4,821	55,397	57,303
Lolo NF Portion		120,900	121,940	71,654	800	120,900	95,646
Flathead NF Portion		348,950	348,950	104,680	0	348,950	348,950
Swan Crest		106,870	106,870	33,120	0	106,870	106,870
Swan Front		141,990	141,990	31,950	0	141,990	141,990
Middle Fork Flathead		42,450	42,450	16,910	0	42,450	42,450
East South Fork Flathead		57,640	57,640	22,700	0	57,640	57,640
Total Acreage		1,032,461	1,033,613	335,665	35,597	1,030,542	1,000,997
Total Flathead NF Acreage		495,430	495,430	156,637	0	495,430	490,020

1/ Additional information can be found in the resource summaries of Appendix C.

2/ Includes acres of very high, high and moderate energy and nonenergy mineral potential. Low potential is excluded.

3/ Includes acres of Management Situation 1 and 2 for grizzly bear. Management Situation 3 is excluded.

4/ Tentatively suitable.

Mt. Hefty - This roadless area lies at the northern end of the Flathead National Forest along the Canadian border. Thoma Ridge provides outstanding views of the Flathead River Valley in both the U.S. and Canada, including Glacier National Park and Waterton Lakes National Park. Along with the Thompson Seton and Tuchuck roadless areas, it forms an important part of the most outstanding grizzly bear habitat found in this region. It is considered as having the highest potential for gray wolf recovery in the Rocky Mountains.

The Mt. Hefty roadless area has a high oil and gas potential, and the timber industry is concerned with the accessible timber east of Thoma Ridge.

Recreation use is light, however, there is excellent hiking along the trail to Thoma Ridge or Mt. Hefty providing good day-use opportunities. Several caves are also in the area.

Benchmark, Coal Ridge, Deadhorse Ridge, and Standard Peak - These roadless areas lie along the east side of the Whitefish Divide and consist of predominately high, rugged ridgetops and upper slopes overlooking developed drainages. Below the rock outcrops, the areas are covered with open coniferous forest containing predominately whitebark pine and Engelmann spruce.

Primary resource concerns here are timber, although the stands are economically and physically difficult to reach. Extensive oil and gas leases exist within these areas.

These areas are inhabited by the grizzly bear. The lower reaches contain elk and mule deer winter range.

There is an extensive trail system throughout these roadless areas providing some opportunity for solitude on day hikes to the ridges. The Smokey Range National Recreation Trail is included in this trail system.

Le Beau- The Flathead National Forest portion of the Le Beau roadless area lies along the western edge of the Forest and is characterized by a diverse and complex combination of lower elevation wet lands, meadows, and steep glaciated rock ridges. There are rock, thin and thick soils, ridges and valleys, warm and dry aspects, with a complex vegetative pattern.

The area has remained roadless because of the difficulty and high cost of removing the timber. Most of the good productive land would be used up for roads and landings. The oil and gas industry has shown a high interest in the area for exploration.

The Le Beau area contains several small fishing lakes and a variety of wildlife. Access to the area is limited with only a primitive trail system.

The area's most unique feature is the evidence of past glacial activity in the form of extensive scouring. The area also contains some of the habitat types needed by Region 1 to complete Research Natural Area objectives.

Swan River Island - The Swan River Island lies approximately three miles south of Swan Lake. The site consists of a wet false island with three high points that are less than 100 feet higher than the general island area.

A very broad range of wildlife exists within this roadless area and the site is popular with the local Audubon Society and other residents because of a wide variety of bird species present.

This area has been recommended for inclusion in the Research Natural Area System.

The island is a highly productive timber producer but because of the riparian concerns, timber management would pose potential conflicts. The entire area has been leased for oil and gas exploration with no surface occupancy.

Mission Additions - These roadless areas lack the vastness of scale or diversity of terrain present in the other roadless areas. They consist of small areas of Federal ownership adjacent to the eastern boundary of the Mission Mountains Wilderness. The sites alternate with sections of private land creating irregular boundaries that would make wilderness management difficult.

The areas have fairly steep terrain with a forested appearance.

A relatively high percentage of these areas are potentially suitable for timber, and the oil and gas industry has these areas leased for exploration.

Summary of Narratives for the Bear-Marshall-Scapegoat-Swan - This roadless area surrounds the Bob Marshall, Great Bear, and Scapegoat Wildernesses. Much of the area was formed by the overthrusting of land along faults. The area is steep and dissected with numerous valleys. East of the Continental Divide the major ecotypes are the western spruce-fir forest and the Douglas-fir forest, with alpine meadow and foothill prairie occurring in lesser amounts. The area is not densely forested and has low productivity, with south facing slopes often open or in a mosaic of forest and meadows. Major ecosystems on the west side are the western spruce-fir forest with some Douglas-fir and alpine meadow in the southern portion. It is densely forested except for alpine meadows in the higher elevations.

Nearly all the major big-game species are present here, including grizzly bear, black bear, cougar, elk, deer, wolf, moose, mountain goat, and bighorn sheep.

Most of this area is rated as having a high to very high potential for oil and gas.

This roadless area has special importance to many people because it is adjacent to three contiguous wilderness areas. Some people view parts of this roadless area as part of their wilderness experience in the Bob Marshall or Scapegoat Wildernesses. Two of the most popular access points to the Bob Marshall Wilderness, Holland Lake and Benchmark, are in this roadless area.

The Flathead National Forest contains 348,950 acres in the Bear-Marshall-Scapegoat-Swan roadless area. Four different portions of this roadless area have been identified on the Flathead National Forest. They are the Middle Fork Flathead River (42,450 acres), East South Fork Flathead River (57,640 acres), Swan Crest (106,870 acres), and the Swan Front (141,990 acres). All of the Swan Crest and the north half of the Swan Front are not really adjacent to the Bob Marshall Wilderness. Instead, these areas form a long narrow peninsula or arm extending northwesterly from the Bob Marshall Wilderness along the crest of the Swan Range.

Middle Fork Flathead River - This area, located along the northern portion of the Great Bear Wilderness, contains steep terrain with broken and diverse country. This area contains important grizzly bear habitat and travel corridors between the Great Bear Wilderness and Glacier National Park. Some of the most important bull trout spawning area is located in the Middle Fork. The majority of the use is by hunters, fishermen, snowmobilers, cross country skiers, hikers, and people using stock to gain access to the Great Bear Wilderness.

East South Fork Flathead River - This area is bordered to the northeast by the Great Bear Wilderness and to the south by the Bob Marshall Wilderness. The area is moderately steep to steep and contains heavily timbered areas to subalpine landforms with scattered rock outcroppings. Elk migrating out of the Middle Fork use part of this area as their migration route. The major use of this area is dispersed recreation in the form of hiking and big-game hunting. Extensive limestone caves are found in the southeast corner of this roadless area.

Swan Crest - The Swan Crest, located in the north half of the Swan Range, is steep as a result of uplifting along the Swan fault. From the top of this range many views can be seen, including Hungry Horse Reservoir, Glacier National Park, the Great Bear Wilderness, Flathead and Swan Valleys, and the Mission Mountains. Jewel Basin Hiking area, a specially designated back-country use area, is located here. Its 28 alpine lakes, mountain streams, meadows, and rocky peaks make Jewel Basin a popular day use area. The Swan Crest is easily accessed for day and weekend use.

Swan Front - This area, located on the western side of the Bob Marshall Wilderness, is a continuous chain of high and often treeless, rugged mountains. Below the high peaks and ridges lie a series of subalpine basins containing numerous lakes. These lakes drain through steep canyons to the gentler terrain of the Swan Valley. Lion Creek, in one of the largest of these canyons, passes through an ancient cedar grove in a series of cascades and falls.

This area includes the Holland Lake Trail, the most popular trail on the west side for access to the Bob Marshall Wilderness.

3. CULTURAL RESOURCES

Known cultural resources on the Flathead National Forest are diverse and represent human occupation of the area for at least 5,000 years. Prehistoric resources include but are not limited to campsites, hunting and fishing sites, rock art, stone or bone tools, trails, and trees whose bark has been peeled by Native Americans and used as a food source. Historic sites date from the 1800's and reflect diverse exploitation of the area's resources. Log cabins on the Forest were associated with a variety of activities. Remnants of cabins indicate the presence at some time in the past of a fur trapping line, logging camp, mining prospect, homestead, or Forest Service lookout or administrative site. Other historic features include log flumes, splash dams, bridges, railroad lines, burial sites, and mines.

In 1976, the Flathead National Forest began conducting inventories for cultural resources that might be adversely affected by management activities in compliance with existing Federal legislation. Approximately 50,000 acres scheduled for ground disturbing activities are inventoried each year. As a result, over 90 prehistoric and historic sites have been located and documented.

Current management direction relating to cultural resources is to inventory areas for cultural properties and to avoid such resources when possible. If avoidance is not feasible, the Forest designs and implements mitigation measures in consultation with the Montana State Historic Preservation Office and the President's Advisory Council on Historic Preservation.

A draft, Phase I (Archaeology and Ethnography), of the Flathead National Forest Cultural Resources Overview, has been completed.

4. VISUAL QUALITY

The scenic environment throughout the Flathead National Forest is diverse. As viewed from critical viewpoints, much of the Forest maintains a natural or near natural appearance. Portions of the Forest shows signs of modification by people. The majority of the modifications that do occur are due to timber harvest and road construction activities.

The wildernesses, which comprise 46 percent of the Forest, are managed with objectives that preserve their visual quality. Similarly, the Jewel Basin Hiking Area and the Flathead Wild and Scenic River System have preservation or retention visual quality management objectives.

In addition, 40 percent of the nonwilderness Forest is considered to be visually sensitive. That is, 519,358 acres of the Forest are frequently viewed by Forest visitors and area residents who expect and desire a landscape where man's activities are not dominant. Thus, in these areas the recommended visual quality objectives are retention (where man's activities are not visible) or partial retention (where man's activities do not dominate the landscape). A significant proportion of these acres are steep, with slopes greater than 40 percent; have poor ability to absorb man's activities without visually evidencing change; and have not been impacted by timber management activities.

Of the visually sensitive acres, critical areas have been identified. These are visually sensitive areas which are most frequently seen by area residents and visitors.

Current Direction for areas with Unit Plans specifies management that is responsive to recommended visual quality objectives. In other areas of the Forest, managed under the older District Multiple-Use Plans, the recommended objectives are not met by existing direction. Some of these are the critical viewing areas. Over time, the visual quality of these areas would be degraded.

5. FISH AND WILDLIFE

The Flathead National Forest provides habitat for approximately 250 species of wildlife and 22 species of fish. National Forest management of wildlife and fish populations is oriented toward protection and improvement of fish and wildlife habitat. The Forest is directed by NFMA to provide the diversity of habitats necessary for maintenance of viable populations of native and desired nonnative vertebrate species. As a measure of habitat diversity, all species have been placed in species groups based on their primary habitat, feeding, and reproduction needs. The species groups and common representative species are shown in Table III-4.

"Indicator Species" have been identified for those species groups whose habitat is most likely to be changed by Forest management activities. The tree dependent group indicator species is the marten; the old-growth dependent group is represented by the piliated woodpecker and the riparian tree dependent group indicator species is the barred owl. These species will be monitored to determine population changes resulting from Forest management activities.*

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* The Flathead National Forest Monitoring and Evaluation Plan is contained in the Forest Plan.

TABLE III-4 Plant Communities and Examples of Dependent Wildlife Species - Flathead National Forest

Plant Community	Representative Wildlife Species
Grass-forb	- Savananah sparrow - Mountain vole
Shrub	- MacGillivray's warbler - Red Fox
General Forest	- Stellars Jay - Coyote
Tree	- Mountain chicadee - Marten*
Old Growth Snag Cavity	- Pileated woodpecker* - Little Brown myotis
Riparian Marsh	- Coumon Loon - Northern Bog lemming
Riparian Tree	- Barred Owl* - Beaver
High Elevation-Alpine	- Whitetailed Ptarmigan - Hoary marmot

* Indicator Species: Other indicator species include threatened and endangered species (grizzly bear, gray wolf, bald eagle, and peregrine falcon); big-game species (mule deer, elk, and whitetailed deer); and fish species (bull trout and cutthroat trout).

The pine marten inhabits mid to late successional Forest communities throughout the Flathead National Forest and is most abundant in the spruce/fir habitat types. The highest population densities have been found in areas with a minimum of 30 percent crown canopy. Large tree openings or clearings appear to inhibit pine marten's movement, particularly in winter. According to the Forest Silviculturist, the average tree opening on the Flathead National Forest is 20 acres; an acceptable size for pine marten habitat. Some areas have openings larger in size and some openings smaller in size. Spruce/fir plant communities are primarily in the riparian areas, most of which are relatively undisturbed with the exception of the tributaries to the North Fork drainage. Generally, the Forest provides adequate but not optimal habitat for the pine marten because of the historic concentration of timber harvesting in more easily accessed areas.

The goshawk generally occupies coniferous forest habitats in mature and old growth forests. Goshawks select stands for nesting which have a high canopy cover (greater than 70 percent), moderate tree density

(350 - 550 trees/acre), high basal areas (140 - 190 square foot/acre), and are one of the older stands within their home ranges. Ideal habitat contains two stands of mature forest in every 9 square mile area. Favored nesting trees are western larch and Douglas-fir. Although goshawks occupy large home ranges, aggressive territorial defense is usually limited to the 20- to 25-acre area around the nest. Twenty acre old-growth stands appear to be the minimum size needed for a nesting pair. A goshawk habitat suitability index model has been developed on the Flathead National Forest to aid in monitoring this species.

The pileated woodpecker inhabits old-growth habitat, which consists of tree stands over 200 years of age, made up of large live trees, large standing and fallen dead trees, and a productive understory. Old-growth stands are unevenly distributed across the Forest, reflecting the fire history of the area. There currently exists about 240,000 acres of old-growth habitat on the Forest outside of wilderness. This acreage has been reduced over time as areas are accessed and managed for timber production. Pileated woodpecker populations have probably declined over time and will continue to decline as the old-growth habitat is reduced from its present level; however, adequate old growth will be maintained to sustain viable populations.

The barred owl requires a large tree cavity constructed by another animal within a riparian habitat with a minimum of 50 percent tree canopy. A mixed coniferous/deciduous habitat type is more valuable than the climax stage of spruce/fir habitat common to unmanaged riparian areas on the Forest. The spruce/fir habitat with large cottonwood trees is ideal. Small stand tree openings, with good populations of rodents, are used as feeding areas. The existing situation, with most riparian areas still undeveloped, provides suitable breeding and feeding habitat. Protection or introduction of deciduous trees into riparian habitat should provide for maintenance of barred owl populations.

a. Fish

There are approximately 3,400 miles of streams on the Forest, about half of which support fish populations. About 600 miles of these streams with viable fish populations are located in the wildernesses, with 1,100 miles of stream fisheries occurring throughout the remainder of the Forest. The streams generally have low to moderate levels of productivity, averaging about 100 6-inch trout per mile. Native fish species include bull trout, cutthroat trout, mountain whitefish, and several nongame species. Introduced species include rainbow and brook trout, arctic grayling, kokanee salmon, and northern pike.

Sixteen streams on the Forest are closed to fishing because of their high quality spawning and nursery habitat. Twelve of these streams provide critical spawning and rearing habitat for bull trout and cutthroat trout and are essential to maintenance of these sport fisheries in Flathead Lake. Four streams on the Forest contain essentially pure populations of westslope cutthroat trout.

Based on fish population counts and productivity modeling using habitat parameters, the Forest's waters are estimated to support about 1,500,000 trout and 350,000 whitefish.

Lakes on the Forest generally have low productive capacity, supporting an average of about 50 fish per acre. Hungry Horse Reservoir has very low productive capacity. Available food and suitable rearing habitat are scarce due to fluctuating water levels and cold water. Some of the lakes have suitable spawning habitat; most require stocking to maintain fish populations.

Most trout populations in the lakes and rivers of the Flathead River drainage are dependent on tributary streams for spawning and rearing. Adult fish migrate from the lakes or rivers in the spring (cutthroat and rainbow trout), late summer (bull trout), or fall (eastern brook trout) to spawn in tributary streams. Flathead National Forest streams support about 53 percent of the Flathead River System's migratory fishery and are essential to maintaining sport fisheries throughout the Flathead River system.

Kokanee salmon from Flathead Lake use tributary streams for spawning, but most sites are not on Flathead National Forest lands. The salmon do, however, depend on high quality water provided in part by the Forest.

In 1980, the Forest provided about 89,000 recreation visitor days of fishing use. Fishing use is expected to increase commensurate with increases in recreational activities generally. Fishing pressure on some of the Forest's streams and lakes is causing resource damage and/or decreased fish populations.

b. Big Game

Flathead National Forest provides habitat for eight commonly hunted big-game species - elk, mule deer, whitetailed deer, moose, Rocky Mountain goat, grizzly bear, black bear, and cougar.

Estimated population levels for elk, mule deer, and whitetailed deer are 4,700, 3,400, and 5,300 respectively. Utilizable winter range forage is generally believed to be the factor limiting population growth.

Not all the animals that inhabit Flathead National Forest lands in the spring, summer, and fall actually winter on Forest lands. Table III-5 displays, by Ranger District, the percentages of elk, mule deer, and whitetailed deer winter ranges that occur on National Forest System and State and private lands.

This table indicates that the Flathead National Forest has a better opportunity to influence elk and mule deer populations than whitetailed deer, whose numbers are limited by the management of winter ranges on State and private lands.

TABLE III-5 Percentage of Landownership by Big-Game Winter Range - Flathead National Forest

Ranger District	Big-Game Winter Range [1]					
	Whitetailed Deer			Elk and Mule Deer		
	National Forest	Private	State & Private	National Forest	Private	State & Private
	Percent					
Spotted Bear	100			100		
Hungry Horse	50	50		90	10	
Swan Lake	40		60	80		20
Tally Lake	20		80	80		20
Glacier View	80	20		90	10	

Some mule deer/elk winter ranges on National Forest System lands are within the wildernesses where forage production can not be manipulated specifically to improve winter habitat conditions. Thus, the potential populations supported by wilderness winter ranges are generally constant, fluctuating only with weather patterns and successional stages of plant growth. About 40 percent of the Forest's total elk and mule deer population winters within wilderness.

Utilizable winter range forage production outside wilderness can be increased through carefully designed and scheduled timber harvest that increases forage production while retaining the desired relationship of tree cover to available forage. Timber harvesting in the past has been concentrated in easily accessed, inexpensively logged areas, resulting in heavily roaded and harvested whitetailed deer winter ranges. The lack of sufficient cover and poor distribution and size of foraging areas limits the effectiveness of these whitetailed deer winter ranges. On the other hand much of the elk and mule deer habitat, generally in steeper areas, is in a natural condition resulting in limited forage availability. To date, winter range management objectives have not influenced timber harvest activities to any significant extent. Prescribed burning of winter range areas has been the major habitat improvement activity.

Moose populations in the Forest may have been impacted by the accelerated timber salvage program conducted in response to the mountain pine beetle epidemic. Extensive timber harvest and roading has occurred in moose habitat on the Tally Lake and Glacier View Ranger Districts.

Rocky Mountain goat habitat is generally in the high elevations above the commercial timberland. Most of the goat populations are within wilderness with a few herds existing along the Swan Range outside wilderness. Providing relatively closer vehicular access to these areas has had more adverse impact than any other Forest management activity.

Increased levels of hunting pressure are anticipated if current trends continue. In 1980 the Forest experienced 60,000 RVD's of hunting, an increase of 20 percent over 1970.

c. Threatened And Endangered Species

Flathead National Forest lands provide habitat for three endangered species: the gray wolf, bald eagle, and peregrine falcon; and one threatened species, the grizzly bear. The woodland caribou, presently identified as a sensitive species in Montana may also be extant.

Although, reports of sightings of lone wolves occur annually from all parts of the Forest, the most likely area for maintenance of a viable population would be in the north end of the Forest, adjacent to Glacier National Park and Canada. In April of 1979, the Wolf Ecology Project captured and radio-collared a female gray wolf (Ream and Mattson, 1982). Wolf activity remained at a low level until the spring of 1982 when a litter of pups was produced in British Columbia. This pack remained in British Columbia primarily but has been occasionally observed in the United States.

During the winter of 1984, increased activity was observed in the United States as far south as Camas Creek. The potential for an additional pack is greatly enhanced at this time.

The Wolf Ecology Project under Dr. Robert Ream resumed field studies on July 1, 1984 with Section 6 funding under the Endangered Species Act.

At this point security from human disturbance appears to constitute the most critical habitat component. An adequate prey base for the northern end of the Forest is assured because deer and elk in that area winter within Glacier National Park. If a wolf pack, however, forms elsewhere on the Forest, further evaluation of habitat needs would be done.

The Flathead National Forest provides about 65,930 acres of suitable nesting habitat for bald eagles, with 10 active nests and nine birds fledged in 1980.

Although the Forest provides approximately 59,000 acres of suitable nesting habitat for peregrine falcon, there are no verified active nests at this time. Nests are usually located on cliffs with an abundant source of prey species. Falcons have been observed during their annual migration flights in the spring and fall.

Most of the Flathead National Forest is considered essential grizzly bear habitat in the Grizzly Bear Recovery Plan prepared by the U.S. Fish and Wildlife Service. This includes all of the wilderness and nonwilderness acres of the Forest except the 70,000-acre "Island Unit" (located west of Kalispell) of Swan Lake Ranger District and the Tally Lake Ranger District (northwest of Kalispell). Forest biologists estimate the existing population to between 150 and 180 grizzly bears. Under Current Direction, the Forest has specific direction for management of grizzly bear habitat on 33,000 acres of Glacier View Ranger District.

The grizzly bear habitat improvement program to date has consisted largely of implementing road access restrictions to increase the bears' security from human disturbance and some prescribed burning in bear feeding areas to increase forage production.

The Grizzly Bear Recovery Plan identifies a target recovered grizzly bear population in the Bob Marshall Ecosystem. The Flathead National Forest is responsible for a portion of this population. This means the Forest would need to provide the habitat components necessary to potentially support 207 bears. A high level of road restrictions and habitat improvement will be necessary to attain this population level.

6. RIPARIAN AREAS

Riparian areas on the Forest include perennial streams, lakes, and reservoirs with their associated floodplains, vegetation, and wetlands. Wetlands include swamps, marshes, bogs, sloughs, potholes, wet meadows, river overflows, mudflats, and natural ponds. The Forest has about 56,000 acres of riparian area outside of wilderness and Flathead Wild and Scenic River areas. Nine percent (5,306) of the riparian acres are wetlands not capable of timber production. Sixteen percent (8,878) of the riparian acres are classified as floodplains.*

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* There are an additional 30,000 acres of surface water area of large lakes and reservoirs on National Forest lands that is not included in land allocation or FORPLAN figures.

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Riparian areas produce many high value resources, including high quality water, fisheries, wildlife habitat, recreation opportunities, timber, and a small amount of domestic livestock grazing. The potential for management conflicts is high. Existing land management direction does not have well defined objectives for riparian areas. Management of riparian areas within primary land designations in existing District Multiple-Use and Unit Plans is defined by reference to Federal and State laws, Executive Orders, policy statements, coordinating requirements, and Forest Service Manual and Handbook functional directives, standards, and guidelines. The management practices in riparian areas and their resulting costs or timber yields were not considered differently from general Forest lands in the 1969 Timber Management Plan. Historically budgets have not funded the level of fisheries habitat management and watershed management practices needed to implement current land management plans. Some riparian areas have been adversely impacted by past timber management activities that reduced productivity of the aquatic system through increased water yield and sedimentation. Timber harvest has also reduced thermal cover for wildlife in some areas.

7. RANGE*

The Flathead National Forest contains very little permanent rangeland. Soil and climatic conditions quickly advance the successional stages of vegetative development toward tree establishment which restricts or eliminates grazable forage. With the exception of natural wet meadows throughout the Forest and natural grass areas in the Bob Marshall Wilderness, the rangeland on the Forest is transitory. Forage production on transitory range depends on vegetative manipulation, such as logging and fire.

Topography, soils, legal direction, private landownership, timber harvest schedules, and other resource constraints determine the availability and suitability of forage. About 485,000 acres (39 percent) of the nonwilderness Forest are considered potentially suitable for grazing of domestic livestock. Wilderness lands have only 357,000 acres (33 percent) which are potentially suitable. On these acres, transitory range is generally available for a 5- to 20-year period following timber harvest. After this period, tree regeneration significantly reduces forage production.

Because of the management constraints and a different type of livestock use, wilderness range has been analyzed separately and will be discussed below.

Noxious weeds are more localized on the Flathead National Forest than other Region One Forests. This is due to the relatively small amount of warm-dry habitat types where noxious weeds are most adapted. Local infested areas have been inventoried and a few direct control projects may be necessary. No large scale control programs are likely to be needed.

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* For more information, see the Flathead National Forest Transitory Range Market Profile, August 1981, in the Forest planning records.

a. Nonwilderness

Swan Lake and Tally Lake Ranger Districts provide nearly all of the domestic livestock grazing opportunities on nonwilderness lands. Generally, National Forest System land is an integral part of a much larger grazing unit involving State and private lands. Twenty allotments have been active within the last few years. Flathead National Forest actual grazing use during 1980 was 3,159 AUM's (nonwilderness), which is below the 3,850 AUM's that would be available annually under current management plans. The normal grazing use season runs from June through September.

Although local demand for Flathead National Forest range can be expected to slowly increase in the next decade, the following factors will discourage increases: a relatively small local livestock industry, high transportation costs and low beef prices, increased public pressure and management costs on public lands, and continuing declines in area cattle numbers as property values increase and ranches are subdivided into smaller parcels.

b. Wilderness

Wilderness forage is grazed by recreationists' stock, Government administrative stock, and wildlife. No cattle or sheep use is permitted. The amount of forage considered available for transportation stock is constrained by criteria that are designed to protect the wilderness resource. Existing levels of wilderness forage use are estimated to be the highest levels acceptable, given these criteria. In fact some areas of the wildernesses are currently being over utilized, creating adverse impacts on the forage and wilderness resources. Other areas are being underused. Ideally, use should be better distributed; however, low levels of funding limit efforts to disperse use and improve visitor education.

In 1980 wilderness AUM's totaled 2,604. Projected increases in Wilderness recreation use indicate that demand for wilderness grazing opportunities will increase.

8. TIMBER

About 835,747 acres or 36 percent of the Flathead National Forest are tentatively suitable for producing commercial timber.

The existing mixture of timber on the Forest is composed of 18 percent lodgepole pine (tree stands with two-thirds or more of the volume lodgepole pine) and 82 percent mixed conifer stands. Since 1975 mountain pine beetle populations have been at epidemic levels, impacting most severely the lodgepole pine. The infestation is moving through susceptible stands across the Forest. This epidemic is expected to subside by 1990 as susceptible lodgepole pine stands are killed or harvested. In 1979, the Flathead National Forest implemented an aggressive program to harvest lodgepole pine to reduce losses in timber volume and stumpage values due to mountain pine beetle-caused mortality. This program greatly increased the proportion of lodgepole pine in the Forest's timber harvest volumes as compared to pre-1978 timber harvest programs.

The age class distribution of the commercial Forest land is 34 percent high risk sawtimber (timber over 120 years old), 20 percent mature sawtimber (80 to 120 years old), 21 percent poles (40 to 80 years old), 14 percent seedling/sapling (1 to 40 years old), 5 percent stagnated stands, 4 percent unevenaged stands, and 2 percent nonstocked.* These stands are unevenly distributed across the Forest.

The 1969 Flathead Timber Management Plan, adjusted for land classification changes, projects an allowable timber harvest volume of 124 MMBF per year. The average annual volume sold since 1975 has been 116.2 MMBF per year. The quantity cut for the same 15-year period is 101.3 MMBF per year.** Both cut and sold figures include scheduled (regulated) and unscheduled (unregulated) volumes.*** The timber harvest volumes projected by the FORPLAN computer model for the alternatives include only scheduled volume. The value of timber sold, according to current accounting methods, has historically exceeded timber related costs on the Flathead National Forest. Exceptions occurred in fiscal years 1981 and 1984 when both the total volume sold and the quantity demanded were low. Even with a favorable overall timber cash flow situation, there has been below-cost sales. These result from the existing geographic arrangement of merchantable timber stands, nonpriced resource constraints, and initial road investment costs to be recovered through future sales using the same road. There will likely be a need for below-cost sales in any multiple-use alternative in the decade ahead for these same reasons.

The Forest currently has over 450 MMBF of timber volume sold and under contract but uncut. This level of uncut volume is higher than the historical average of about 200 MMBF.

The Forest's RPA timber harvest objectives could be met by continuing existing management.

Historically, the majority of timber management activities have occurred on the less than 40 % slopes. Of the total potentially suitable commercial timberland, 46 percent is 40 % or less in slope, 27 percent has 40 to 60 % slopes, and 27 percent exceeds 60 % slope.

In addition, mature timber stands are concentrated in certain drainages or portions of drainages which have not had a severe natural fire within the last century. These are the stands which have had the majority of timber harvest within the last 10 to 20 years.

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* Stagnated, unevenaged, and nonstocked are defined in the glossary.

** The Forest Service calculates volume cut and volume sold for each fiscal year. Cut and sold volumes do not necessarily equal each other because timber cut is a function of the amount of logs needed by local mills.

*** Scheduled (regulated) timber volume is volume which is scheduled for harvest and calculated as the allowable harvest from suitable forest land.

Recently, the concentration of harvesting on lower slopes in certain drainages has combined with the aggressive lodgepole pine harvest program developed in response to the mountain pine beetle epidemic. This has led to situations where the capability of watersheds to accept the increased sedimentation and water yield associated with timber harvest has been approached.

The wood products industry in the Flathead National Forest zone of influence is diversified, with three of the State's four plywood plants and the only particleboard plant, fiberboard plant, and pulp and paper mill in the State in addition to the sawmills.* Normal production capacity of zone of influence sawmills, that produce at least 10 MMBF per year, was determined in 1976 to be 687 MMBF, with about 322 MMBF of that capacity located in Flathead County. Production capacity updated to 1981 is estimated to be 650 MMBF, 291 MMBF of that in Flathead County.

The raw material requirements of the large sawmills and plywood plants that characterize the wood products industry of the Flathead National Forest zone of influence necessitate drawing timber from wide geographic areas. Timberlands in Missoula County in 1976 supplied only 31 percent of the total volume utilized, with substantial volumes received from Flathead and Sanders Counties as well as other counties in Montana and Idaho. In Flathead County, 60 percent of the raw materials utilized by county sawmills was harvested within the county while the remainder was drawn from surrounding counties. Lake County's mills evidence similar patterns of utilization.

In 1976, the original ownership of sawtimber received by sawmills and plywood plants varied within the zone of influence. In Flathead County, about 65 percent of the total sawtimber received by area mills was harvested from National Forest System lands. Approximately 30 percent was harvested from private lands. On the other hand, in Lake and Missoula Counties only 18 percent of locally utilized sawtimber was of National Forest origin while 75 percent had been harvested on private lands.

Timber from the Flathead National Forest has historically been processed primarily in Flathead County, with smaller percentages utilized by mills in Missoula and Lake Counties. Thus approximately half the timber volume used by Flathead County mills has been harvested from Flathead National Forest lands; more recently the volume has been closer to 40 percent and perhaps as low as 30 percent. For example, in 1983, 265 MMBF was milled in Flathead County with only 81 MMBF actually harvested from the Flathead National Forest that year. About one-fourth the volume used in Lake County and a much smaller percentage but higher volume of material processed in Missoula came from the Flathead National Forest.

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* Information for these paragraphs was drawn from the "Flathead National Forest Timber Market Profile", August 1981, Flathead Forest planning records.

9. PRIME RANGE-, FARM-, AND TIMBERLANDS

No prime rangelands or farmlands as defined by the Soil Conservation Service are located within the Flathead National Forest boundaries.

The United States Department of Agriculture defines prime timberlands as lands with soils capable of growing wood at a rate of 85 cubic feet or more per acre per year in natural stands. The Forest has about 643,700 acres of land meeting the prime timberlands criteria.

10. VEGETATION

Flathead National Forest plant communities are naturally diverse (referring to the distribution and abundance of different plant and animal communities, across the Forest). Most of the major vegetative habitat types common to western Montana are located on significant acreages on the Forest. The interaction of soil, topographic, and climatic variation is evidenced in the wide array of habitats, ranging from the warm dry ponderosa pine/bunchgrass type to the cool moist whitebark pine types. Nearly all tree species native to western Montana grow within the Forest boundaries. The majority of tentatively suitable timberlands are cool moist vegetative types.

The long, cold winters and hot, dry summers which characterize our climate result in an environment in which the potential for vegetative growth is very good. This climate is poor, however, for decomposing organisms which thrive in a warm, moist environment. Scientists have determined that on an average acre of forest land, vegetative production exceeds the rate of decomposition by a factor of two to one. Natural fire has been the agent that maintained the long-term energy balance within this forest system.

Uncontrolled natural fire was the primary natural force establishing the even-aged vegetative communities of the Forest. These communities are made up of timber stands, each of a different age class. As an example, the fire history of the Flathead National Forest has resulted in relatively large areas vegetated by even-aged lodgepole pine stands. These stands resulted from fires which occurred around the turn of the century. These stands are now mature and provide optimum habitat for mountain pine beetles. Hence, the Forest is experiencing an epidemic of mountain pine beetle which is destroying significant acreages of timber, and, over time, creating the fuels to feed another catastrophic fire, repeating the natural cycle.

Although the Flathead National Forest's diversity has remained relatively unchanged over time, the distribution of vegetation on the Forest does change as a result of both natural and man-caused events. Vegetation is the major component of the forest ecosystem that lends itself to direct control by man. From a Forest management and social perspective, an increase in the number of tree species and the distribution of age classes (i.e., greater vegetative diversity) would be desirable to minimize the occurrence of insect epidemics and large-scale fires.

Natural and man caused fire has been vigorously suppressed through the recent history of the Forest. Only in recent years have land managers recognized the benefits of natural fire; therefore, a program of natural fire management in the wildernesses is designed to allow fire to resume its natural role of regulating plant diversity. Throughout the remainder of the Forest, timber harvest and prescribed fire have become the major factors influencing the Forest's plant communities. A major goal of the Flathead National Forest's timber management program is to substitute planned periodic renewal of the vegetation, in patterns that produce multiple public benefits, in place of natural castastrophic fires. The commercial timber management program is the most cost efficient way to achieve many of the nonpriced public benefits dependent on the condition and arrangement of forest vegetation. Examples of these benefits are various wildlife habitats, reduced forest protection costs, reduced probability of catastrophic fire, and visual quality.

The timber management program, through commerical timber harvest, converts old-growth timber stands to young stands. Uneven-aged management, using individual tree selection, was used as the primary silvicultural system in the 1940's and early 1950's. Extensive use of uneven-aged silviculture was found to have long-term problems for application in Northern Rocky Mountain forests where fire formerly played a dominant role, and where uncontrolled, castastrophic fires are no longer socially acceptable in a managed Forest.

Uneven-aged silviculture techniques also exhibit problems of compatibility with the existing even-aged vegetative communities of the Flathead National Forest in other ways. Uneven-aged (multistory) stands, of shade tolerant species resulting from selection harvesting, increase the risk of losses to fire and insects/disease because of fuel accumulations over time. Frequent logging entries which occur under uneven-aged management are more disturbing to wildlife than other forms of forest management. Frequent entries also offer more risk of soil compaction in extensive landtypes which are subject to soil compaction.

Uneven-aged management is most applicable in special management situations such as riparian areas or scenic areas. It is biologically and economically impractical to attempt to practice uneven-aged management over vast forest areas that will result in incompatibilities with the natural system.

Even-aged regeneration (clearcut, seed tree, and shelterwood) systems have been used since the 1950's. A substantial portion of the existing old growth on the Forest has been harvested, however, sufficient old growth remains throughout the Forest in areas where management objectives preclude timber harvest, or in special riparian areas, to provide habitat for viable populations of old-growth dependent species.

Even-aged management is ecologically compatible with and duplicates the natural influences of fire. Economically preferred species such as pine and larch are readily reproduced in even-aged management, and even-aged management allows for fuel disposal during harvest entries. Due to less frequent logging entries, even-aged management techniques are less impactive to wildlife species such as grizzly bears, gray wolves, and elk which need undisturbed security areas.

Accelerated harvesting of the even-aged lodgepole pine stands has the potential for increasing species and age class composition. Existing diversity appears to be adequate to meet multiple-use resource management objectives.

11. WATER

The Flathead National Forest provides approximately 7,000,000 acre-feet of water per year to the Columbia River. Five major stream systems feed the Flathead River drainage, which eventually flows into the Columbia system. The three forks of the Flathead River--the North Fork, South Fork, and Middle Fork--drain a major portion of the Forest. The Stillwater River, located on the western portion of the Forest, empties into the main stem of the Flathead River, a short distance above Flathead Lake. The Swan River flows north and empties into Flathead Lake, the largest natural freshwater lake west of the Mississippi. Hungry Horse Reservoir dams the lower end of the South Fork of the Flathead River and provides power, flood control, and late season downstream flows. A dam on the Swan River near its mouth provides for community power generation. The remainder of the major rivers and streams are free-flowing.

The quality of water in streams and rivers on the Forest is generally excellent. This is true even in drainages which have had very high levels of logging and road-building activity using practices that would not be acceptable under current standards. Characteristics (biological, chemical, and physical) of water may vary within a watershed, from watershed to watershed, and from one season to another. Generally, the greatest natural variation is exhibited in sediment loads (a physical characteristic). Man-caused changes in sediment loads may cause further variations.

The amount of sediment carried by streams is directly related to volume of streamflow. The carrying capacity of a stream increases as streamflow increases. This means that as streamflow increases, the stream can carry more of the sediment delivered to it from land sources or tributary streams and/or can erode sediment from the sides of the stream channel.

Several community and noncommunity water supply watersheds are located partially or totally on the Flathead National Forest. In addition to these surface sources, domestic water supplies are obtained from (man made) wells, (natural) springs or infiltration galleries that directly or indirectly receive water from National Forest lands.

The Flathead National Forest has developed ground water and surface water supplies furnishing potable water to 16 campgrounds and picnic areas and 17 administrative sites. A number of summer homes and outfitter camps use National Forest streams for drinking water also. One District Ranger Station has a small hydropower facility. The applications of the early 1980's to study the feasibility of micro hydro sites on the Forest have been dropped.

Management activities on the Forest have impacted water quality primarily through increases in sediment. Road construction and maintenance have directly supplied sediment to streams. Timber harvest has indirectly supplied sediment by increasing water yield to the point that, in places, peak flows eroded stream channels. To a lesser extent, livestock grazing impacted the water resource. In addition, localized heavy recreation use has had minor impacts on water quality. The majority of potential sediment produced by management activities can be controlled through timing activities and with specialized techniques in project design, layout, construction, and maintenance, along with immediate installation of erosion preventive measures such as water bars, grass seeding, fertilization, and mulching. Also, potentially damaging water yield and increases can be prevented through careful scheduling and location of timber harvest; however, some degree of increase in sedimentation and water yield over natural is inevitable if ground-disturbing activities are to occur. This increase can be kept within State water quality standards.

In an effort to ensure that potential increases in sedimentation are within State Water Quality Standards, and do not degrade the Forest's water resource, "beneficial uses" of water have been identified. The three categories of use for the Flathead National Forest are: public water supplies, fisheries, and other uses including recreation and scenic values. Public water supply watersheds were identified from MDHES (Montana Department of Health and Environmental Sciences) classifications and water rights filings with the Montana Department of Natural Resources. Fisheries streams were identified according to Montana Fish, Wildlife, and Parks designation. The others were watersheds where recreation or scenic values are high or that had been heavily impacted by past logging and road building. Every stream on the Forest has been classified by the MDHES and they have set limits of allowable change for each class. The "natural" condition is not to be exceeded by set amounts for each class for each constituent of the water. "Natural" by definition of MDHES includes "... material ... from developed land where all reasonable land, soil, and water conservation practices have been applied." Public water supplies are most sensitive to degradation of water quality and important fish streams are second most sensitive.

Of the 6 watersheds on Flathead National Forest that are public water supplies, 4 provide water to communities. Watersheds used by Essex, Columbia Falls, and Whitefish (Essex Creek, Cedar Creek, and Haskill Basin respectively) are managed according to FSM 2543.12 "Requirements for Municipal Watersheds." The remaining public water supply watersheds are managed with best management practices under the State water quality classification for the watershed.

Management of watersheds other than those used for community water supplies is guided by Best Management Practices in accordance with State water quality standards and MDHES Stream Classifications, 1982.

12. RESEARCH NATURAL AREAS

The Northern Region RPA objectives assign 17 habitat and vegetative types to the Flathead National Forest to locate, evaluate, and recommend as RNA's (Research Natural Areas). There is one existing RNA on the Flathead, located in the Coram Experimental Forest (see Chapter IV for discussion of proposed RNA's by alternative).

13. MINERALS

Mineral resource management requires the Forest Service to conform to congressional mandates to make minerals from National Forest System land available and at the same time to minimize the adverse impacts of mining activities on surface resources.

Minerals management on National Forest System lands requires interagency coordination and cooperation. Although the Forest Service is responsible for the management of the surface resources, the BLM (Bureau of Land Management) in the Department of the Interior is primarily responsible for management of Federal minerals. Since it is impossible to divorce mineral operations from surface management, these agencies have developed cooperative procedures to accommodate their respective responsibilities.

a. Oil and Gas

The dominant mineral activity on the Forest is oil and gas leasing. A total of approximately 1,234,028 acres, outside wilderness, are either leased or under lease application. All lease applications in existing wildernesses have been withdrawn. About 638 oil and gas leases were issued on the Flathead since 1982.

Each lease, if issued, includes numerous standard and special stipulations to minimize effects of oil and gas activities on surface resources. In almost all instances, oil and gas exploration, development, and production can occur without causing unacceptable effects on soil, water, timber, range, scenic, wildlife, cultural, and recreation resources.

Oil and gas exploration on the Flathead National Forest has been in the preliminary phases. Numerous seismic investigations and geologic mapping projects have occurred in the last 5 years. This is typical of the first stage of oil and gas exploration. The Forest's first "wildcat" exploratory well is expected in the next year or so.

In rare situations, where the oil and gas activity and the surface resource management are incompatible, the Federal Government can decide which resource will be the dominant use. The Forest Service only makes recommendations on these matters; the final decisions are to be made by the BLM. Historically BLM has followed Forest Service recommendations.

An oil and gas environmental assessment prepared by the Forest in 1980, documents the possible environmental consequences associated with leasing and provides the basis for the Forest's lease recommendations. The environmental analysis to support the oil and gas leases was declared to be in violation of NEPA and the Endangered Species Act in a 1985 Federal Court decision. The court ruled that all Flathead National Forest oil and gas leases be set aside. This court decision is under appeal to the Ninth Circuit Court of Appeals. All oil and gas leases have been suspended pending the outcome of this lawsuit. New leases and subsequent lease reissuance will undergo additional analysis as required by NEPA, tiering to this EIS by incorporating by reference the information presented in this EIS.

b. Other Leasable Minerals

Except for the aforementioned oil and gas activity, no other activity or interest has been expressed for other leasable minerals such as coal, phosphate, oil shale, or geothermal.

c. Locatable Minerals

Hard rock mining and exploration is under the authority of the 1872 General Mining Law, which entitles the miner to do all reasonable and necessary activity to explore for and develop mineral resources. Forest Service control of these activities is through its surface mining regulations. These regulations require miners to submit a Notice of Intent to conduct a mining operation. If the Forest Service determines that such an operation will cause a significant disturbance to the environment, the miner will be required to submit a Plan of Operation. All operations under the Mining Law of 1872 must be conducted, insofar as feasible, to minimize adverse environmental impacts. Operations cannot proceed until approved by the Forest Service. Forest Service control is limited to assuring the miner uses all reasonable means to minimize impacts on surface resource values.

Proposed mining operations would not be permitted if the activity would jeopardize an endangered or threatened species or its habitat. In almost all instances, however, mitigating measures could be developed to allow the project to go forward.

Currently there are 62 unpatented mining claims on the Flathead National Forest. There are no known active mining operations. No Notice of Intent has been submitted for approval within the past few years. No commercial ore deposits are known to exist on the Flathead National Forest. Since no commercial size deposits of hard rock minerals have been discovered on the Flathead National Forest over the last 70 years, it is anticipated that no mines will be developed in the immediate future.

d. Common Minerals

Common variety minerals, such as gravel and common rock deposits, are extensively utilized for State, County, and Forest Service road construction and maintenance. About four mineral material permits (no charge) are issued to State and County agencies each year. The Forest Service uses about 100,000 tons of this type of material each year. Estimates on the dollar value for these materials runs around 50 cents per ton.

e. Withdrawals

Federal statute permits withdrawal of areas from appropriation, entry or use for mining in order to protect certain surface resource values or Government improvements.* About 1,107,718 acres of the Flathead National Forest are currently withdrawn.

Congress withdrew 24,520 acres of that area by classifying portions of the South and Middle Forks of the Flathead River as components of the National Wild and Scenic Rivers System. This withdrawal will continue. The remaining acres include 13,265 acres withdrawn to protect the Coram Experimental Forest and various other administrative sites. All of these withdrawals will be reviewed within 8 years for possible termination. The current policy is to terminate most of these kinds of withdrawals, since the Forest Service's 1974 surface mining regulations protect Government improvements and special surface resources. On Janauary 1, 1984, approximately 1,070,000 acres of designated wilderness on the Flathead National Forest were withdrawn from mineral entry in accordance with the Wilderness Act of 1964.

14. LANDS

The 2,628,674-acre Flathead National Forest (gross area) contains 278,740 acres of non-National Forest ownership. Major owners of these inholdings are Plum Creek Timber Company, Inc., State of Montana (mostly school trust lands), and Champion International Corp. A major checkerboard landownership pattern exists in the upper Swan Valley with Plum Creek Timber Company, Inc., and the State of Montana. Widespread subdivision for recreational and rural residential use over the past decade has resulted in thousands of other small landownerships.

Landownership adjustment has been accomplished in compliance with the 1967 Comprehensive Land Adjustment Plan. This document emphasizes landownership consolidation without fully weighing other resource management objectives, such as big-game winter range, maintenance of riparian areas, and threatened and endangered species.

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* Withdrawals are authorized by the Organic Administration Act of 1897 (30 Stat. 34) as amended and supplemented, 16 U.S.C. 473-478, 479-482, 551; and by the Wild and Scenic River Act of 1968 (82 Stat. 906) as supplemented and amended, 16 U.S.C. 1271-1273, 1274(A), 1275(A).

Land purchases have been concentrated along the North and Middle Forks of the Flathead Wild and Scenic River. Approximately 2,500 acres of fee acquisitions and 1,375 acres of easement acquisitions were made between 1978 and 1982. Because the Wild and Scenic River land acquisition program has only been intermittently funded since 1983, the Forest has proceeded with an active program to utilize donations, land exchanges, county zoning, and other means to protect and enhance Wild and Scenic River resource values.

15. ROADS

As of January 1985, there are 3,941 miles of existing road on the Forest, including approximately 239 miles of arterial roads, 1,007 miles of collector roads and 2,695 miles of local roads. Local roads include 665 miles of primitive roads which have been identified for further study during area and project transportation planning. Of the primitive roads, 119 miles have been identified for obliteration so far.

The Forest's arterial road system is 100 percent complete while the collector road system is about 98 percent complete. The existing local roads system, if Current Direction were maintained, would be about 40 percent complete. The majority of roads yet to be built are local roads providing direct, final linkage to the timber resource.

Historically, road management programs have been developed and implemented by the Ranger District administrative levels leading to road management policies that varied from one District to another. No Forest-wide policy or direction existed. In 1982 the Forest Supervisor implemented the Forest Travel Planning Policy and Procedures. This policy provides for synchronizing the Forest Visitor Map with the Forest Plan. The basic policy is to provide the greatest possible level of motorized public access while promoting public safety, protecting resources, and minimizing user conflicts commensurate with the Forest Plan.

16. PROTECTION

a. Fire

The Flathead National Forest's vegetation reflects the ongoing impacts of fire. Major fires have occurred every 3 to 10 years. The greatest number of acres were burned in 1910, 1926, and 1929, resulting in the existing acreages of lodgepole pine.

Lodgepole pine killed by mountain pine beetle and still standing on the Forest will create a major fuel buildup over the next few years as the trees decay and fall.

The Flathead National Forest averaged 53.8 fires from 1974-1983. Of these 59.3 percent have been lightning caused and 40.7 percent caused by human activities.

The incidence of human-caused fires has grown slightly in recent years. Increased recreational activities anticipated in the future as well as accelerated residential development of intermingled private lands has the potential for increasing the number of human-caused fires.

The Flathead National Forest has the second largest protection area in the Northern Region. Forest personnel provide protection from fires occurring on State, Federal, and private lands. The Forest maintains one of the Forest Service's 55 Inter-Regional fire crews and one of the Region's three air tanker bases.

The Bob Marshall and Great Bear Wildernesses are managed as a natural fire management area, under a 1985 fire management plan.

The Forest Service has historically used "prescribed" fire in carefully controlled conditions to achieve certain objectives. About 5,000 acres are burned each year for preparation of sites for reforestation and for slash disposal. Prescribed burning is also used to improve wildlife habitat.

b. Insects And Disease

In 1980 the number of timbered Flathead National Forest acres affected by the mountain pine beetle increased to about 315,000--a 260 percent increase since 1979. The greatest concentration continues to be on the Glacier View District where much of the increase in beetle activity occurred in high elevation whitebark pine stands.

Mountain pine beetle distribution is expanding to susceptible lodgepole pine stands on the Spotted Bear and Tally Lake Ranger Districts. As a result of an environmental assessment prepared in 1980 to address the mountain pine beetle epidemic, an accelerated sale program was scheduled on about half of the lodgepole pine on the Tally Lake Ranger District.

The tabulation below lists the maximum potential loss due to mountain pine beetle given no timber harvest:

	DECADE		
	1	2	3
	Average MMBF Per Year		
HiProd lodgepole pine	12.0	12.9	6.0
LoProd lodgepole pine	8.0	10.0	7.0
Forest Total	20.0	22.9	13.0

Over a 50-year period, this represents a total potential loss of 938 MMBF, or an average annual loss of 19 MMBF if stands were allowed to grow and die unmanaged.

The Flathead National Forest management objective is to salvage extensive amounts of lodgepole pine before serious losses occur. Not all beetle-killed lodgepole pine can be utilized because of other resource values.

Spruce bark beetle activity has been noted in three drainages of the North Fork of the Flathead River. Conditions fostering the current buildup originated several years ago in scattered spruce blowdown. Trap trees and phermone traps are being used to attract spruce beetles and spruce beetle activity seems to be waning.

The spruce bark beetle affects mature spruce trees. A previous epidemic population buildup resulted in the removal of 60 MMBF in the late 1960's. Due to this and previous harvests affected by an epidemic population in the 1950's, not many extensive spruce stands remain. The Flathead National Forest has salvaged spruce for the past 4 to 5 years. The areas of extensive spruce remaining are in mixed stands and many are planned for harvest as access becomes available.

Other Forest insects and diseases are presently at endemic population levels and are manageable.

IV. Environmental Consequences

INTRODUCTION

This chapter forms the analytic and scientific basis for comparison of the alternatives, including the Preferred Alternative, described in Chapter II. Environmental consequences are the expected effects of activities scheduled to implement an alternative. The applicable effects of all the major activities and resource programs are discussed. Economic and social effects are discussed where applicable.

The consequences are described as quantitative or qualitative changes from the current situation in terms of significance, magnitude, and duration. The discussion identifies consequences that are direct, indirect, cumulative, or unavoidable. The relationship of short-term use of resources to long-term productivity is also discussed along with irreversible and irretrievable commitment of resources.

Mitigation was an important consideration in the formulation of standards and guidelines, prescriptions, and minimum management requirements associated with each of the alternatives. These items are discussed in other parts of the document or in special sections of the appendices and will not be repeated here.

This chapter was extensively rewritten between draft and final documents in response to public comments and new data. To make it easier for the reader to review, the format was changed so each management activity section shows the major changes made.

FOREST PROGRAM OR ACTIVITIES

A. WILDERNESS

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

In the Preferred Alternative, the Flathead National Forest has proposed four additions to the National Wilderness Preservation System. Two of these additions are new since the Draft EIS documents were issued. The acreage of the Swan Front Addition proposed in the DEIS Supplement has also been increased. These additions are listed in the following tabulation:

Slippery Bill Addition (Change from DEIS)	6,295 Acres
Jewel Basin (Change from DEIS)	31,783 Acres
Swan Front/Bunker Cr. Addition (Increase of 11,148 Acres from DEIS)	54,815 Acres
Limestone Cave Addition	5,187 Acres
Total	98,080 Acres

Wilderness outputs for alternatives are displayed in Table IV-1.

TABLE IV-1 Wilderness Outputs - Flathead National Forest

Alternative/ Benchmark	Output/Activity Wilderness Acres (Thousands)	Annual Wilderness Capacity (MRVD)
1	1070.0	320
2	1070.0	271
3	1070.0	320
4	1070.0	139
5	1070.0	320
6	1070.0	320
7 CD	1070.0	152
8	1070.0	320
9	1565.3	468
10	1266.7	379
11	1118.8	333
12	1152.4	345
13	1213.2	363
14	1266.6	379
15	1330.2	398
16	1443.8	432
17 PA	1168.0	349
Departure	1168.0	349
PNV	1070.0	319

2. ENVIRONMENTAL CONSEQUENCES

Wilderness is designated to preserve a natural resource for present and future generations of Americans. Its purpose is preservation of areas in their natural state where man is only a visitor. Wilderness management, subject to statutory exceptions, prohibits development of facilities beyond those essential to protect the resource and provide for a degree of public safety. Trails, rustic directional signs, and primitive facilities to control pollution and site abuse are permitted.

The existing classified acreage of the Mission Mountains, Great Bear, and Bob Marshall Wildernesses will not be altered under any alternative. Schafer Airfield, in the Great Bear Wilderness, would be retained under all alternatives.

Alternatives 1 through 8 recommend no additions to the National Wilderness Preservation System. The change of recreational carrying capacity in Alternatives 1 through 8 reflect a range of intensities for management of existing classified wildernesses. Alternatives 9 through 17 and the Departure reflect a range of alternatives for recommending additions to the existing wilderness system. Alternative 9 assigns all 495,000 acres of the existing roadless inventory to wilderness and represents the maximum contribution to the wilderness system possible on the Flathead National Forest.

The site-specific consequences to wilderness values of various alternative options on each roadless area are detailed in Appendix C. The purpose of this discussion is to summarize the Forest-wide cumulative impacts of the various alternatives.

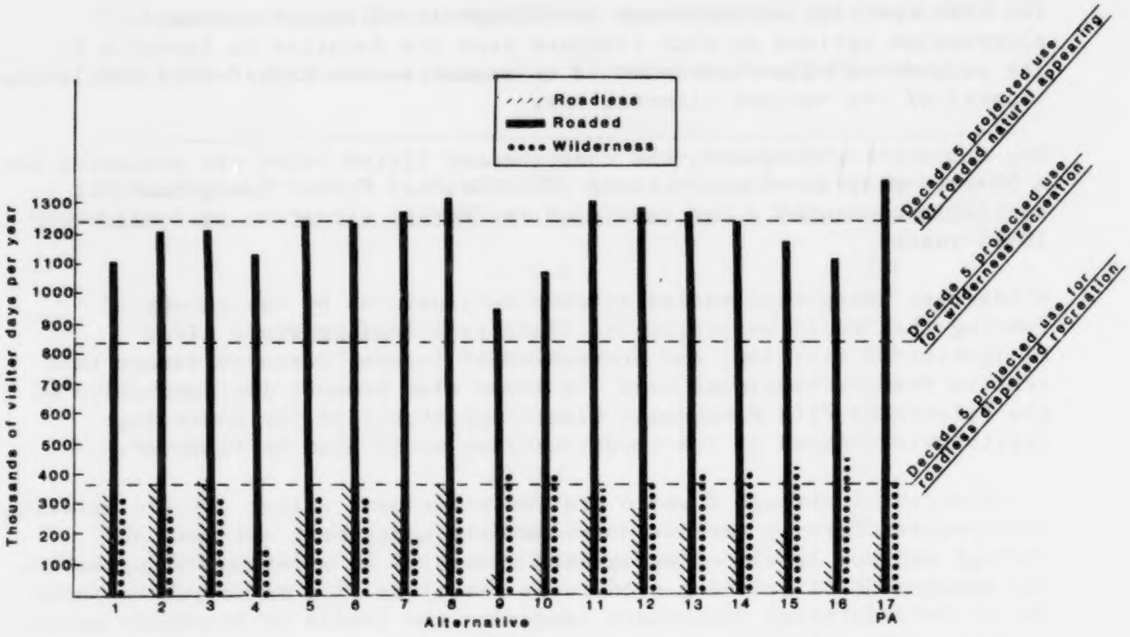
For comparative purposes, the consequences listed below are projected for a 50-year program of activities. The National Forest Management Act regulations require a new review of the Forest situation at least every 10-15 years.

Wilderness management varies between alternatives by the amount of funding that would be available. Increased funding would allow mitigation of existing, and prevention of future, resource damage that results from recreational use. It would also promote implementation of the Wilderness Fire Management Plan. Opportunities for educating visitors in methods of low-impact camping would also be improved.

Alternatives 1 through 8 would protect wilderness values outside existing wildernesses through various nonwilderness management options, and through various levels of management intensity in existing wildernesses. The management of existing wilderness resources is a major public issue due to deteriorating wilderness resources and trails in heavy-use areas. Analysis data indicates that existing use is near the carrying capacity for alternatives with low wilderness management budgets such as Alternatives 4 and 7 (Current Direction). Higher funding levels for management of wilderness resources, visitor information, and trail maintenance, as in Alternatives 1, 3, 5, 6, and 8, would permit overused areas to be rehabilitated. They would also permit carrying capacities adequate to accommodate projected public use for the first few decades.

Alternatives 9 through 17 would not only manage existing wildernesses to their fullest capacity, but they would add various areas to the wilderness preservation system. Additional information on the wilderness recommendations of each alternative can be found in the alternative description in Chapter II. Additional information on wilderness recommendations by alternative for each inventoried roadless area can be found in Appendix C. The analysis indicates that recreational use of wilderness in the future will exceed the maximum capacity of the Forest (Alternative 9). Figure IV-1 illustrates the relationship of estimated wilderness use capacity for the various alternatives to Decade 5 projected wilderness use. At some time in the future under all alternatives, increased levels of control of recreational use in wilderness will be necessary to prevent damage to the wilderness resource.

The LAC (Limits of Acceptable Change) process is currently underway in the Bob Marshall Complex provide a framework for determining the range of social and resource conditions appropriate for that area (Stankey, 1984). This process would be applied to wilderness areas under each alternative to establish the management action necessary to protect the unique wilderness values of each wilderness. Wilderness management intensity, as determined by funding level, will affect the length of time needed to complete and implement the LAC process as well as the management practices available for application.



IV-1. Recreation Capacity by Opportunity Type Compared to Decade 5 Projected Use.

Flathead National Forest

Alternative 17 (PA) recommends the addition of about 98,000 acres of the existing roadless inventory to the National Wilderness Preservation System. The recommendations would add high quality areas to the wilderness preservation system while minimizing tradeoffs of priced and nonpriced public benefits. The acres of tentative suitable timberlands included in the recommendation are mostly economically unsuitable acres due to high costs of access, logging, and cultural practices. If the recommended acres are not classified by Congress, they will continue to be managed under a roadless management emphasis under the Forest Plan. Protection of wilderness attributes through alternative nonwilderness roadless land use assignments is discussed in Section B below of this chapter.

Dispersed Recreation - Wilderness classification provides people with primitive recreation opportunities, allowing them to hunt, fish, hike, ride, and backpack in an undeveloped environment. As wilderness is increased, however, the range of opportunities and the carrying capacity for nonwilderness recreation is reduced. A reduction in visitor carrying capacity is expected to result from Alternative 17 recommendations. Most of the area recommended for classification in Alternative 17 is unsuitable for ORV use. Effect on the range of dispersed recreation opportunities available Forest-wide will not be greatly changed from the recommended nonwilderness management.

Visual Quality - The visual quality of the roadless areas designated as wilderness under these alternatives would be positively affected by protecting sites that might otherwise be developed in nonwilderness alternatives.

The wilderness boundary line location may be important to the esthetics of an area. Placement of the proposed boundary could impact the visual quality due to differences between wilderness management and nonwilderness management. For instance, if a timber management area borders a wilderness, timber cutting may eventually occur right up to the wilderness boundary. Buffer strips will not be built into either the wilderness side or timber management side of the boundary. The lack of such buffers could affect visual quality standards. Alternative 9 would exhibit this situation to the largest degree due to the large amount of recommended wilderness perimeter that would be adjacent to suitable timberlands. Opportunities for feathering vegetation from inside the wilderness boundary would not exist under present wilderness guidelines. No significant effects would result from adoption of the recommended boundaries of Alternative 17.

Mineral Activities - Generally, as the number of acres designated as wilderness increase, fewer acres are available for mineral exploration and development. Where valid claims and leases exist, mineral development costs could increase due to the desire to maintain the wilderness values through additional mitigating measures to the extent reasonably possible. These additional costs could also make marginal energy discoveries financially inoperable. The Flathead is considered to have high potential for substantial oil and gas resources. If these resources are made unavailable due to wilderness designation, this could have a negative effect on the Nation's energy independence goals, national balance of payments, and flow of royalty payments to the U.S.

Treasury and the States. Most of the roadless areas on the Flathead National Forest are currently leased. The Forest Service does not propose to recommend the termination of any existing lease on land that may be designated as wilderness. Costs to "buy back" these leases would be very high when compared to the remote probability that any on-the-ground developments will ever take place. Over the long term, beyond the expiration of any current leases, the designation of wilderness reduces the acreage available for energy and mineral development. This could affect economic development of the Flathead Valley area. All of the areas recommended for wilderness classification in Alternative 17 have oil and gas leases issued on all or part of the areas.

Soil and Water - Wilderness classification protects the soil and water resources from resource development activities. As wilderness acres increase, more areas would be maintained as high quality watersheds. Erosion would be close to natural rates. The Swan River would have the upper drainages protected under alternatives which designate the Swan Front as wilderness.

Old-Growth Timber - A direct effect of wilderness management would be the maintenance of old growth. This would benefit wildlife species dependent on old growth. Over time, the Forest would tend towards climax species with the absence of timber harvesting and fire. This would benefit old-growth dependent wildlife species such as woodpeckers, owls, and rodents.

Fisheries - Wilderness management, while providing security from development and disturbance, does not necessarily have an effect on fisheries on the Flathead National Forest. For areas included in Alternatives 11, 12, and 13, wilderness classification would produce essentially no change in potential trout populations. These alternatives have wilderness proposals, but the areas considered do not include sites where planned direct habitat improvement would yield significant changes in stream trout numbers. The remaining five alternatives have varying impacts on stream trout numbers.

The greatest indirect effect would occur during Decades 1 and 2 in Alternatives 9 and 16 (refer to Figure II-7), when timber harvest previously scheduled in areas proposed for wilderness would be shifted into downstream areas and may affect water quality and spawning habitat. Potential effects of this change on the fisheries resource would be greatest in the Middle Fork and North Fork drainages. Riparian area management would be intensified and management prescriptions would provide adequate protection. Wilderness designation would provide protection for existing trout populations by maintaining limited access.

Trout populations in lakes would essentially remain unchanged because present lake management methods could be continued in compliance with wilderness management requirements.

Total trout numbers would be changed only slightly from those predicted in Forest Plan alternatives without additional wilderness acres. Most anticipated changes result from wilderness designation that reduces opportunity for direct habitat improvements. The Preferred Alternative maintains fish outputs due to shifting planned fish habitat improvement scheduled for Lion Creek in the Swan Front to other streams.

Wildlife - Large deviations in old growth between alternatives would not occur because a large percentage of the old growth within roadless areas managed as wilderness under Alternatives 9-17 was designated as dispersed recreation or amenity values in other alternatives.

a. **Big Game** - The most significant effect of wilderness on big game is the limitation on habitat improvement practices imposed by wilderness management. Management options for wildlife habitat purposes are considerably constrained, operational costs are high, and wilderness management funds historically are low. The projected effects on big-game habitat are a result of not being able to manage vegetation patterns on critical winter range. The resulting impacts, as increasing amounts are transferred to wilderness, are displayed by the usable forage and potential animal numbers in Table II-18.

   The wilderness recommendations in Alternatives 10-13 and 17 affect a relatively small amount of potential big-game winter range that is also suitable for timber management. Fringe areas of both deer and elk winter ranges suitable for timber management are included in these alternatives. These fringe areas are along the Swan Front and are expanded under Alternatives 9, 14, 15, and 16 to bring in some suitable elk winter range in the Spotted Bear and Bunker Creek areas.

   Analysis has shown that timber cutting schedules can be adjusted on the suitable winter range so forage production goals can be achieved and maintained without sacrificing cover objectives except under Alternatives 9, 15, and 16. Roadless winter range acres unsuitable for timber production are added to wilderness under Alternatives 9, 15, and 16 (see Table II-7 for comparison of winter range forage production), and the scheduled periodic habitat improvement to sustain browse production is foregone. These areas are Dry Parks, Baptiste Mountain, Columbia Mountain, Kah Mountain, and Bunker Creek. Big-game security would be improved on both winter and summer ranges by the alternatives which add, to the wilderness system, areas that would have been developed and managed for timber and/or winter forage production in Alternatives 1-8. In the Preferred Alternative only small shifts in the location of forage production result from the wilderness addition recommended.

b. **Threatened and Endangered Species** - Alternatives 9, 14, 15, and 16 propose to manage key grizzly bear habitat in Bunker Creek and the Mt. Hefty-Tuchuck areas as wilderness. Planned treatments to maintain desired patterns of grizzly habitat components over time using prescribed fire and timber harvest in commercial timber areas would be replaced by natural plant succession. A lower long-term habitat capacity is projected for an area under wilderness management than if the area were managed to achieve and maintain desired patterns of vegetation for bear habitat, while at the same time controlling human use in the area. Human activities affect grizzly bear behavior and their use of available habitat. The wilderness management objectives for solitude, primitive recreation, and elimination of development and motorized equipment result in improved security for the grizzly bear when compared to the dispersed recreation or development practices of nonwilderness management. The adverse effects of a reduction in managed grizzly bear habitat may be offset by the additional security provided under wilderness management in large areas that were scheduled for development activities in comparable alternatives. Alternative 17 retains the key grizzly bear/gray wolf habitat managed for that purpose. It provides additional security by managing portions of the Swan Front, Jewel Basin area of the Swan Crest, Slippery Bill area of the Middle Fork, and Limestone Caves in the Spotted Bear River area as wilderness rather than dispersed recreation or commodity uses.

Social and Economic - Wilderness classification is a management designation which evokes a wide range of social responses. It provides some people with the satisfaction that one of the relatively few remaining roadless, undeveloped areas in the country has been protected. Others feel the frustration that yet another area has been removed from the opportunity for resource development. Whatever the actual, measurable resource impacts, the perceived impacts are likely to be greater (Shannon, et. al., 1978).

The estimated change in returns to the State and receipts to the U.S. Treasury are compared for each alternative in Figures II-15 and II-17 respectfully. Most of these receipts are generated by timber sales. Generally, those alternatives which harvest the smallest amount of timber generate the lowest receipts to Governments and support the fewest employment opportunities in the communities. The woods products industry is important to the local economy and lifestyles of the Flathead Valley and the Forest Zone of Influence (Keegan, 1983).

Wilderness classification can attract more people to an area who would contribute dollars to the local economy through the tourism industries. Outfitting activities often can expand into these areas. Opportunities for timber harvest and mineral development, however, are eliminated in designated wilderness. The impacts on the economy are directly related to the potential for development of these resources if the area is not classified as wilderness (Johnson, 1983).

Wilderness classification can alter existing recreational uses of the area if motorized activities had been prevalent. It also affects the type of management that occurs, altering somewhat the opportunities and settings provided.

Wilderness recreation use does not generate high levels of economic benefits to a community when compared to other recreation uses such as ski resorts, lakeshore development, and other recreational oriented development. In addition, salaries of recreation service jobs are usually much lower than traditional industries like logging, lumber manufacture, mining, and oil and gas.

Alternatives 9 and 16, which recommend all or most of the roadless areas for wilderness classification, have the greatest potential for affecting the local economy, existing land-use patterns, and resource development opportunities. Other alternatives have increasingly fewer conflicts with economic development as size of wilderness recommendations decrease. The productive timberlands contained in these recommendations are economically unsuitable. No significant adverse effect to the local economy is expected to result from Alternative 17 recommendations due to this fact.

On the other hand, Alternative 8, with no wilderness classification, would be closer to perpetuating an existing social situation. Alternatives 10 and 14, which closely reflect the Montana Wilderness Associations' proposal for wilderness, present recommendations that wilderness advocates feel strongly about. They feel these wilderness recommendations have benefits of protecting scarce and unique wilderness resources that outweigh the impacts on existing land-use patterns and resource development opportunities (Cunningham 1983).

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Changes in timber harvest schedules associated with Alternatives 9-17 are minor for Decade 1. This would make short-term effects on timber uses and economics relatively small, because any timber harvest that could be accommodated in roadless areas proposed for wilderness would be rescheduled on nonwilderness portions of the Forest. The long-term effects on timber uses are projected by the change in long-term sustained yield for each alternative (see Table II-18).

Short-term timber outputs can be maintained or mitigated by intensified management in areas outside wilderness recommendations. Most Flathead National Forest suitable timberlands are managed intensively in a regulated condition for all alternatives. The long-term effects of reductions in the landbase suitable for timber harvest cannot be mitigated within the range of practices currently available or projected.

The maintenance of primitive recreation opportunities is maximized and maximum protection is given to fisheries, water quality, old-growth timber, and associated wildlife species. Threatened and endangered plant and animal species are protected, but little can be done to improve their habitats. Natural-appearing landscapes are preserved although buildup of natural fuels may increase risks of wildfire.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Timber harvest opportunities are foregone. That amount of timber volume is lost to mortality. This loss occurs most heavily on proposed high wilderness alternatives. The potential loss is roughly proportional to the tentatively suitable timberlands designated as wilderness.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

For alternatives with higher levels of wilderness, significant timber volumes will be lost to mortality. After long periods there is a high probability that natural disturbances such as fire will cause the loss of large stands.

Minerals exploration and development are foregone in wilderness.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

The proposed Swan Front addition to the Bob Marshall Wilderness contains small portions of land adjacent to land in state and private ownership. No conflicts have been identified.

7. ENERGY REQUIREMENTS

There are no significant energy requirements from any level of wilderness.

B. ROADLESS MANAGEMENT

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

The Preferred Alternative made several site-specific shifts in the boundaries between suitable timberlands which generally permit roads and roadless management areas. Outputs for the Preferred Alternative have been added.

The total amount of area to be managed as roadless changed only slightly when wilderness recommendations are considered. Most changes were shifts in types of roadless management within areas targeted for roadless management in the DEIS. The changes involve shifting roadless dispersed recreation to wilderness or to amenity value management.

2. ENVIRONMENTAL CONSEQUENCES

The 495,000-acre roadless inventory defines areas on the Forest which qualify for wilderness consideration. These are undeveloped areas of 5,000 acres or more (including roadless lands contiguous to existing wildernesses). The inventory was developed with public involvement. Changes to the inventory were made as a result of public comment. Consequences of alternatives on the roadless and wilderness values of the inventoried roadless lands vary by total effect and by rate of change due to development as shown in Table IV-2.

TABLE IV-2 Percent of Existing Roadless Inventory Remaining Roadless - Flathead National Forest

	Alternatives									
	1	2	3	4	5	6	7CD	8	9	10
Decade 1	99	92	97	99	99	92	93	96	100	99
Decade 5	91	71	80	76	81	67	55	68	100	82

	Alternatives								MAX	MIN
	11	12	13	14	15	16	17PA	Departure	PNV	LVL
Decade 1	96	96	96	96	98	99	97	97	92	100
Decade 5	75	75	77	80	85	98	78	78	67	100

The inventoried roadless areas on the Flathead National Forest are primarily high alpine ridges, with productive timberlands only on the lower elevation fringes. About one-third of the roadless inventory is tentatively suitable timberlands. Much of that acreage is economically unsuitable or very marginal for economical harvesting and future management. This is why even the highest timber emphasis alternatives would develop less than 10 percent of the roadless inventory in Decade 1. Over half the roadless inventory would still qualify for wilderness consideration if development proceeded as projected in the highest timber emphasis alternatives. The Preferred Alternative would road about 3 percent of the roadless inventory in Decade 1 and about 22 percent if continued over the long term.

Roadless values exist within the Forest outside the roadless inventory areas. These are undeveloped areas of less than 5,000 acres, such as unroaded ridgetops on Tally Lake Ranger District. Roadless values are protected outside wilderness designations through assigning land use prescriptions for roadless management such as amenity values or roadless recreation. Alternatives will generally have smaller assignments to roadless management as objectives for priced outputs are increased (e.g. Alternative 4), or as wilderness recommendations increase (e.g. Alternative 9). The total acres assigned to nonwilderness roadless management, plus wilderness acres for each alternative provide a good index of the overall protection of roadless values for each alternative (Table IV-3).

Additional consideration was given to roadless values not included in the roadless inventory as a result of public comment. One such area known as the "Lost Jack" area south of Spotted Bear was not inventoried roadless because of a planned project for the same year as the inventory. No comments were received on the inventory, but the Montana Wilderness Association and others commented on the Supplemental DEIS. As a result, the road project has been postponed and a portion of the Lost Jack area assigned to a riparian wildlife prescription in Alternative 17.

There are few, if any, activities specifically associated with roadless management. These activities are discussed in the water quality, wildlife/fish, and dispersed recreation sections.

Roadless designation of productive timberlands may reduce the Forests' PNV and contribution to the regional economy because timber harvest by traditional means is precluded for a specified period of time. On the other hand, those businesses and individuals dependent on recreation will benefit since this increases the recreation opportunities.

TABLE IV-3 Wilderness and Nonwilderness Area Assigned to Continued Roadless Management (Thousand Acres) - Flathead National Forest

	Alternatives									
	1	2	3	4	5	6	7CD	8	9	10
Nonwilderness	320	394	429	139	450	352	386	384	97	275
Wilderness	1070	1070	1070	1070	1070	1070	1070	1070	1565	1267
Total	1390	1464	1499	1209	1520	1422	1456	1454	1662	1542

	Alternatives/Benchmarks								
	11	12	13	14	15	16	17PA	MAX PNV	MIN LVL
Nonwilderness	338	320	281	279	243	164	296	299	9
Wilderness	1119	1152	1213	1267	1330	1444	1168	1070	1070
Total	1457	1473	1494	1546	1573	1608	1464	1369	1079

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The proposed use of lands to provide for semiprimitive recreation has a measurable effect on long-term productivity. The timber productivity of resources is maintained but the opportunity to make the area more productive through intensive management is foregone. While nondevelopment maintains the opportunity for semiprimitive recreation, it is also important in the maintenance of old-growth timber and its associated wildlife habitat. Natural-appearing landscapes are preserved, although the opportunity for more intensive wildfires is increased by the build-up of fuels. Assignment of some timberlands to roadless management is cost efficient and improves PNV as indicated by the PNV Benchmark.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Timber harvest opportunities are foregone. That amount of timber volume is lost to mortality.

Proposing roadless management land use is not irreversible, but any suggested changes in that designation would be subjected to an intensive analysis -- including public involvement -- in order to change the land use designation. Such analysis may occur each time the Forest Plan is subjected to a reevaluation (every 10-15 years).

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

There will be reduced timber volumes due to roadless management objectives.

Roadless designations also limit mineral exploration and development because of access difficulty. Many types of wildlife and fish habitat improvements may be impossible or expensive to accomplish. Control of insects, disease, wildfire, and noxious weeds, in most cases, will be more difficult and costly.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

No conflicts with other land management plans are likely to occur as a result of roadless management. Major conflicts associated with roadless designations are internal and involve timber management and mineral exploration and development.

7. ENERGY REQUIREMENTS

Some energy may be used to maintain recreation facilities, primarily trails, but this use is generally associated with recreation.

C. RESEARCH NATURAL AREAS

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

There were no significant changes to the proposed Research Natural Area recommendations between draft and final. The tables were updated to reflect the current acreage.

2. ENVIRONMENTAL CONSEQUENCES

Research Natural Areas are limited to research, study, observation, monitoring, and educational activities that are nondestructive, nonmanipulative, and that maintain unmodified conditions (FSM 4063.02).

The Northern Regional Guide assigns 17 habitat and vegetative types to the Flathead National Forest to locate, evaluate, and recommend for RNA's (Research Natural Areas).* There is one existing RNA on the Flathead National Forest located in the Coram Experimental Forest. Forest Service personnel have located five additional potential RNA's, that are comprised of nine of the needed habitat types. Based on the way in which potential RNA sites were designated under each alternative, Table IV-4 displays numbers of RNA's and estimated acreages judged compatible with the multiple-use objectives of each alternative.

TABLE IV-4 Research Natural Areas - Flathead National Forest

	Alternative							
	1, 16	2	3	4	5, 10	6-9	7CD	Departure, 8, 11-15, 17 PA
Numbers of RNA's	5	1	5	5	5	3	3	3
Total RNA Acreage	4238	400	4248	4238	4238	883	883	4238

Table IV-5 lists the habitat types that have been assigned through the Northern Regional Guide as the Flathead National Forest's objectives for RNA (Research Natural Area) recommendations and how those objectives are met by the Preferred Alternative. The table lists a candidate area(s) representive of each assigned type. Establishment reports will be prepared during the first decade for each candidate area prior to official classification as an RNA. For habitat types under investigation, the Forest will review opportunities for natural areas on National Forest System lands that would meet the Flathead National Forest's objectives for research natural areas, and after reviewing the opportunities on the Forest, candidates will be selected.

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* Research Natural Area objectives for the Flathead National Forest are displayed in the Northern Region Guide and in the Flathead National Forest Plan.

TABLE IV-5 Research Natural Area Objectives - Flathead National Forest

Habitat Type Code	Vegetative Habitat Type*	Occurrence**	Proposed (P) or Existing (E) RNA	Alternative 17 Total RNA Acres
Forested Types				
230	PSME/FESC	Minor	Little Bitterroot (P)	222
260	PSME/PHMA	Major	Coram (E)	839
310	PSME/SYAL	Major	East Shore(P)	495
410	PICEA/EQAR	Minor	Under investigation	
420	PICEA/CLUN	Major	Swan River Island (P)	304
450	PICEA/VACA	Minor	Le Beau (P)	786
520	ABGR/CLUN	Major	Swan River Island (P)	304
530	THPL/CLUN	Minor	Swan River Island (P)	304
570	TSHE/CLUN	Major	Under investigation	
610	ABLA/OPHO	Minor	Under investigation	
620	ABLA/CLUN	Major	Tuchuck (P)	1592
660	ABLA/LIBO	Major	Tuchuck (P)	1592
Non-Forested Types				
	ALPINE	Major	Tuchuck(P)	1592
	AGSP/POSA	Minor	Under investigation	
	FESC/AGSP	Major	Under investigation	
	ARTR/FESC	Minor	Under investigation	
	PUTR/FESC	Minor	Under investigation	

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* Vegetative descriptions are abbreviations of species names.

** Major representative in a zone.
Minor representative in a zone.

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The timber productivity of resources is maintained but the opportunity to make the area more productive through intensive management is foregone. While nondevelopment maintains the opportunity for semiprimitive recreation, it is also important in the maintenance of old-growth timber and its associated wildlife habitat. Natural-appearing landscapes are preserved, although the opportunity for more intensive wildfires is increased by the build-up of fuels.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Timber harvest opportunities are foregone. That amount of timber volume is lost to mortality.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

RNA designations also limit mineral exploration and development because of access difficulty. Many types of wildlife and fish habitat improvements may be impossible or expensive to accomplish. Control of insects, disease, wildfire and noxious weeds, in most cases, will be more difficult and costly.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

None identified.

7. ENERGY REQUIREMENTS

There are no significant energy requirements for Research Natural Areas.

D. DISPERSED RECREATION

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

The reduction in dispersed recreation acres as a result of increasing amenity values and recommended wilderness under the Preferred Alternative is the only significant change in this section.

2. ENVIRONMENTAL CONSEQUENCES

The following discussion compares the amount of recreation opportunity provided under each alternative for wilderness, dispersed recreation, and roaded natural-appearing opportunities. The potential each alternative has for meeting future needs for recreation opportunities is displayed in Figure IV-1. Decade 5 projections are used as an index of possible future needs.

The major effects of wilderness classification decisions on the recreation environment relates to the mix and quality of various recreation opportunities.

Nonwilderness recreation opportunities are defined by the ROS (Recreation Opportunity Spectrum) definitions (USDA, Forest Service, 1982). The effects of additional wilderness classification are discussed by each ROS classification.

a. Primitive - Additional wilderness classification will provide more primitive ROS area as this is the objective of wilderness management. Not all wilderness acres can provide a primitive recreation opportunity. This is true if an existing or proposed wilderness boundary is adjacent to developed areas where the sights and sounds of man are evident. The capacity to accommodate a high number of recreation visits is limited by the primitive ROS objective.

b. Semiprimitive Nonmotorized - Although this recreation environment can occur in wilderness, it is not the objective of wilderness management. More wilderness classification on the Flathead will generally reduce the availability of this recreation environment. More recreational use or higher densities of people can be accommodated by semiprimitive nonmotorized environments than in primitive environments.

c. Semiprimitive Motorized - Additional wilderness classification reduces the availability of this recreation opportunity as the use of motorized equipment is prohibited in wilderness. Recreational use density can be more than is permitted under semiprimitive nonmotorized, but less than roaded natural-appearing.

d. Roaded Natural-Appearing - Wilderness classification will prohibit the development of this recreation opportunity in classified areas. Roaded natural-appearing permits the highest density of recreational users of the ROS system.

Most alternatives come reasonably close to meeting estimated future demand for roaded and semiprimitive roadless recreation. Exceptions are alternatives which have a low recreation emphasis and funding (Alternative 4), or alternatives with high wilderness (Alternatives 9, 10, and 15), or high grizzly bear (Alternatives 1 and 16) which limit capacity.

Alternative 9 would result in the Forest offering primarily two types of dispersed recreational opportunities. Wilderness recreation opportunities would be available in higher elevations and roaded natural-appearing opportunities in lower elevation areas managed for timber production. The small amount of roadless dispersed recreation offered under Alternative 9 is generally of low quality. It would be composed primarily of scattered small areas of unproductive forest lands. Examples of these areas are rocky ridgetops on the Tally Lake Ranger District, the Teakettle Mountain area on Glacier View Ranger District and the north end of the Mission Range on the Swan Lake Ranger District. The opportunity for motorized recreation in a semiprimitive environment would be virtually eliminated on the Forest.

A maximum effort to meet future wilderness use (Alternative 9) would result in about 58 percent of that projected use being accommodated. This would be at substantial cost to the Forest's ability to accommodate total recreational needs.

Alternatives that include most of the Swan Crest area in the wilderness recommendations have the same general effects on the recreational opportunity potential of the Forest as discussed above for Alternative 9, except in slightly reduced degrees. This is due to the fact that the Swan Crest area has high quality dispersed recreation opportunities covering the full spectrum of opportunities. Any alternative that classifies the entire Swan Crest as wilderness would affect the availability of a range of high quality recreational opportunities now available to local residents.

Alternatives 11 and 12 recommend wilderness classification only for portions of the Swan Range south of Sixmile Mountain. This would moderate the potential change in the Forest-wide recreation environment due to wilderness.

Alternative 17 (PA) trades off some dispersed recreation capacity in favor of increasing wilderness. Increased capacity in roaded natural capacity is primarily a result of increasing the estimated riparian area which has a higher recreation potential.

Recreation use in some of the new wilderness areas could be expected to increase because of wilderness designation drawing attention to these places. The increase, however, would not be significant due to the inaccessibility of many of the proposed areas, and may be only temporary. There would be an additional need created for intensified management to prevent overuse of the accessible sites.

The dispersed recreation management program maintains or constructs facilities such as trails, trailheads, toilets, hitch racks, stock ramps, parking areas, and information signs to enhance the recreational experience of the Forest visitor and to protect other resources. Visitor education and information are important components of this program, whose objective is to provide recreationists opportunities to use the National Forest lands.

Wilderness - Recreation is an important use of wilderness areas but that use is subordinate to protecting the natural integrity of the wilderness ecosystems. Wilderness areas are managed to feature opportunities for solitude and primitive recreation (Wilderness Act of 1964). To protect these attributes, all forms of motorized recreation are prohibited in wilderness. Nonmotorized recreation also has the potential to damage wilderness ecosystems (Weaver 1974). The dispersed recreation use may have to be limited and managed (permits, etc.) in order to maintain primitive recreation opportunities or protect wilderness ecosystems (USDA, Forest Service 1984 RPA Assessment Supplement).

Roadless Resource - The probability of recreation/wilderness conflict is greatest in roadless dispersed recreation areas currently receiving heavy use such as the Swan Crest, and lowest in low-use areas such as Thompson Seton.

Accommodating recreational use in nonwilderness roadless areas may produce some imprint of man on the areas through construction of high standard trails, campsites, and other improvements. Most people agree that such modifications can be accepted or mitigated if the future needs determine the area should be designated wilderness.

Soil and Water - In both roaded and unroaded environments, studies have shown that use of specific campsites, trails, and trailheads may adversely affect soil and water in localized areas, causing erosion, soil compaction, and degraded water quality (Cole and Schreiner, 1981; Pacha, 1980). This impact has been observed on the Flathead National Forest.

Off-road vehicles adversely impact soil and water in heavy-use or highly erosive areas. These effects occur in relatively few areas of the Forest. More prevalent are the impacts of horse and foot traffic in wet or sensitive areas, both within and outside the wildernesses.

Well-used trails show evidence of significant resource damage if maintenance is not sufficient to maintain the tread. Alternatives which provide increased funding for management of dispersed recreation would best be able to mitigate the physical impacts of recreation use. Bridges or corduroy (planking) can be used to protect the tread of trails and prevent soil disturbance. Water bars are one means of preventing erosion of trails. Visitor education can also play a role in prevention of resource damage.

Although impacts of human use will continue to be visible under all alternatives, all provide funding that exceeds Current Direction and, therefore, would be better able to address resource damage than Current Direction.

Mineral Activities - Generally the dispersed recreation management areas are located in rough terrain which precludes extensive oil and gas or mineral development (Oil and Gas Leasing Environmental Assessment, Flathead National Forest, 1980). Where the land use designations of the alternatives coincide with the roadless recreation areas of Current Direction, "No Surface Occupancy" stipulations have been applied to leases.

Mining and oil and gas exploration and development would be allowed to occur in other roadless dispersed recreation areas, but special stipulations would be used to ensure maximum protection of recreational values (Management Prescriptions, Flathead National Forest planning records).* Preliminary exploration by cross-country travel or helicopter would be encouraged. New roads would be allowed only when supported by sufficient assay or seismic information. Timing restrictions would be used to minimize potential conflict between recreational use and oil and gas exploration and development. To the extent possible the visual quality of the area would be protected through the use of esthetic stipulations.

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* Oil and gas is discussed here and in the following sections in terms of the compatibility between oil and gas exploration and development and long-term surface resource objectives. In most situations, the existing leases include stipulations that would be compatible with the land use designations and resource management objectives of the alternatives. In some instances, however, existing stipulations may not be as restrictive as surface management objectives might desire. The Forest would work closely with the lessee to achieve compatibility. Eventual reissuance of the lease (within the next 10 years) would include the necessary additional stipulations. In some cases, excessively restrictive existing stipulations could be relaxed.

Fish - As dispersed recreation use of the Forest increases over time, utilization of the Forest's fisheries will increase, requiring increased levels of management if quality recreational fishing opportunities are to be maintained (Hanzel, 1977; Bjornn, 1961). Increases in fishing pressure have already been observed in the Flathead River drainage. The levels of fish habitat improvement and rehabilitation of spawning areas associated with Alternatives 1, 5, 8, 10, 11, 16, and 17 would best be able to respond to increased fishing pressure. Alternative 3 would be somewhat less responsive, but still adequate in areas with high fisheries values. Alternatives 4, 6, and Current Direction would be least responsive (see Figure II-7).

Wildlife - Contiguous areas managed to provide roadless dispersed recreation opportunities also provide habitat for wildlife species including grizzly bear, gray wolf, elk, and wolverine, which require security from the disturbance associated with roading and resource development. No roads would be constructed in these areas and no timber harvest would occur. Alternative 5, provides the largest contiguous land use designations for roadless dispersed recreation management. Alternative 4 would ensure the least amount of security for wildlife due to the large acreage designated as minimum management and limited acreage managed to provide roadless dispersed recreation opportunities.

Under all alternatives, the vegetation in areas managed to provide roadless dispersed recreation opportunities will advance to the climax plant successional stages. Therefore, wildlife species dependent on old-growth trees and snags will benefit in the long run from this management objective.

PNV - Dollar benefits associated with dispersed recreation opportunities contribute significantly to the Forest's PNV. Noncash recreation benefits generally comprise one-third of the Forest's total present value benefits (see Table II-18). Alternatives 8, 11, and 17 would provide the most discounted dollar benefits associated with recreation while Alternative 4 would provide the least.

Social and Economic - A dispersed recreation setting provides local residents and visitors with a diverse array of recreational opportunities. For some opportunities, the Forest is a place "to be." The esthetic qualities of the National Forest System lands are emphasized. These qualities provide opportunities to be alone, to be contemplative and to withdraw from day-to-day activities.

Other opportunities require that the National Forest System lands provide a place "to do" something such as hiking, fishing, or trailbike riding.

The Preferred Alternative would provide a variety of opportunities, mixing the esthetic opportunities with the active.

Certain environmental factors--land and vegetative types, scenery, water, and wildlife--can contribute to the quality of the recreational setting. On the Flathead National Forest, public comment and the recreation staff have identified specific areas where environmental factors have combined to assure high quality roadless recreational opportunities. These areas include the north end of the Glacier View Ranger District, the Swan Mountain Range, Glacier Slough, and the Spotted Bear River.

Alternative 5 retains these roadless areas in a roadless state, thereby providing the highest potential for quality roadless recreation of all the alternatives. The Preferred Alternative manages fewer high quality roadless areas for dispersed recreation opportunities but maintains those identified above (with the exception of the north end, managed to achieve grizzly bear habitat objectives). Alternative 4 manages the fewest high quality areas to provide roadless dispersed recreation opportunities.

Diverse, high quality recreation opportunities positively affect the local economy by providing an environment for local recreation and tourism-oriented businesses. Effects of recreation on the local economy are tied to dollars spent on recreational activities and to the employment generated by recreation use. Alternatives which emphasize recreation show an eventual increase in recreational employment; i.e., in the service sectors of the local economy (restaurants, motels, service stations, and so on). Recreation management objectives which limit the Forest's timber harvest opportunities by reducing the suitable land base can adversely affect the local area's timber industry.

Recreation does not contribute substantially to the Flathead National Forest's returns to the U.S. Treasury or to the Forest's returns to State. Recreation-related returns include campground fees and special-use fees associated with resorts, summer homes, the Big Mountain Winter Sports Area, and outfitter and guide permits.

Protection - Because recreation-use levels under all alternatives are expected to increase over time, the number of person-caused fires can be expected to increase (Tveidt, 1982).

Timber - Although most roadless dispersed recreation opportunities are provided on nonproductive lands, roadless dispersed recreation designations would somewhat reduce the suitable timber base in all alternatives except Alternatives 6 and 7. Under these alternatives, reductions in the suitable timber base reduce the long-term sustained yield capacity of the Forest.

Most of the roadless dispersed recreation opportunities in all alternatives would be available in areas which are not tentatively suitable for timber production. Thus, potential conflict between timber management and roadless recreation opportunities (which preclude timber harvest) are generally slight. Alternatives 5, 9, 10, 15, and 16 are alternatives which would manage large amounts of tentatively suitable timberland for roadless dispersed recreation or wilderness. Alternatives 5, 9, 10, 14, 15, 16, and, to lesser extents, Alternatives 3, 8, and 17 would maintain the greatest proportion of existing unroaded areas managed to provide dispersed recreation opportunities.

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The short-term use (i.e., construction and maintenance) of trailhead facilities, toilets, hitchracks, stock ramps, and loading areas will have similar long-term effects on timber productivity as developed recreation sites. Although trails can be abandoned and the land's appearance may eventually approximate the original condition, this is not likely to happen as long as the demand for dispersed recreation remains high.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Once facilities and trails are constructed, they are likely to be maintained into the foreseeable future. This is not an irreversible commitment, however, since the Forest Plan management direction is subject to revision at least every 15 years. At that time management direction may change. Trails and sites where facilities are located may be designated for other uses.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

Reduced timber harvest due to dispersed recreation management objectives.

Limited freedom to explore and remove mineral resources.

The loss of vegetation displaced by the construction and maintenance of the facilities and trails cannot be avoided. These facilities and trails will tend to concentrate use in certain areas and along certain routes. Despite care and maintenance, minor soil erosion will occur. Mitigation is planned through site-specific closures and use restrictions set forth in the Forest Visitors Map.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

No conflicts with other land management plans are likely to occur as a result of dispersed recreation activities.

7. ENERGY REQUIREMENTS

Energy is required for the maintenance and construction of dispersed recreation facilities, but less than for developed recreation facilities. This is a small part of the total energy use on the Forest. The major use of energy associated with dispersed recreation is that used by the public in travel to and from recreation activities on the Forest. As use increases, the energy used will increase proportionally.

E. DEVELOPED RECREATION

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

There were no significant changes to this section.

2. ENVIRONMENTAL CONSEQUENCES

Developed recreation management on Flathead National Forest includes maintenance of 28 campgrounds and picnic areas, swimming sites, boat launches, and trailhead facilities; and administration, under special-use permits, of 67 summer homes and 6 resorts.

The Forest's developed recreation program generally does not adversely affect other resources with the exception of minerals. Existing developed recreation sites are withdrawn from mineral and oil and gas exploration and development. Special stipulations require "No Surface Occupancy" for oil and gas activities within 400 feet of developed sites (Oil and Gas Leasing Environmental Assessment, Flathead National Forest, 1980).

Concentrated human use at specific developed sites may have a localized adverse effect on other resources. If site design is not appropriate and maintenance not adequate, concentrated use leads to destruction of vegetation, resulting in a site with a degraded appearance and high potential for soil erosion (Cole and Schreiner, 1981). Concentrated use of areas with inadequate sanitary facilities adversely affects water quality in alternatives with limited funding for maintenance. Adverse effects would occur during the time prior to implementation of mitigation measures (Clark, et al., 1971).

Under all alternatives these localized problems eventually would be mitigated through site maintenance and facility reconstruction or redesign. Alternatives that provide increased levels of maintenance funding would generally prevent problems. If problems are not avoided, these alternatives would permit immediate mitigation of resource damage. The full-service management levels of these alternatives would provide for the highest level of visitor contacts and education in an effort to prevent vandalism or inadvertent damage of sites by Forest visitors. Under Current Direction, low levels of funding would limit abilities to correct the adverse impacts of human use (see Figure II-3).

Cultural resources may be damaged through public use of developed sites because prehistoric and historic cultural sites on the Flathead National Forest were generally located near water where existing campgrounds are located today (McLean, 1981-82). Inadvertent damage through trampling or vandalism destroys these nonrenewable resources.

Under all alternatives, developed site management will comply with existing laws and regulations regarding the protection of cultural resources.

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The construction and management of developed recreation sites will enhance and compliment the public's overall recreation experiences. Sites would be committed to long-term use and programed for continuous recreation outputs. The effects of roading and use could be expected to be evident for a long period of time even if the sites were abandoned. Acreage committed to developed recreation would not be available for timber production.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Once established, these sites are likely to be retained and become long-term commitments for the recreation resource. Other resource outputs from developed sites would be minor.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

To minimize impacts, users would have to comply with established rules and regulations. Sites would be modified, vegetation managed, and facilities introduced to minimize impacts to soil, water, vegetation, and habitat. Effects on other resources would be minimal.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

Where similar privately owned facilities are managed, National Forest developments might be in competition.

7. ENERGY REQUIREMENTS

Energy will be required to develop and maintain these sites. Users will consume energy proportionate to the distance they travel, time spent in use of areas, and increases in use. Projected energy requirements for the first five decades for developed recreation is displayed in Table IV-6.

TABLE IV-6 Energy Consumption Related to Developed Recreation (Billion BTU's) - Flathead National Forest

	Decade				
Alternative	1	2	3	4	5
1	70.2	70.2	70.2	70.2	70.2
2	70.0	70.0	70.0	70.0	70.0
3	70.2	70.2	70.2	70.2	70.2
4	70.0	70.0	70.0	70.0	70.0
5	72.0	72.0	72.0	72.0	72.0
6	70.0	70.0	70.0	70.0	70.0
7 CD	70.0	70.0	70.0	70.0	70.0
8	70.2	70.2	70.2	70.2	70.2
9	70.1	70.1	70.1	70.1	70.1
10	70.3	70.3	70.3	70.3	70.3
11	70.3	70.3	70.3	70.3	70.3
12	70.3	70.3	70.3	70.3	70.3
13	70.3	70.3	70.3	70.3	70.3
14	70.3	70.3	70.3	70.3	70.3
15	70.3	70.3	70.3	70.3	70.3
16	70.3	70.3	70.3	70.3	70.3
17 PA	70.3	70.3	70.3	70.3	70.3

F. CULTURAL RESOURCES

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

There were no significant changes to this section.

2. ENVIRONMENTAL CONSEQUENCES

The AIRFA (American Indian Religious Freedom Act) requires that Federal agencies consult with Native American traditional leaders to determine the appropriate measures for protection and preservation of cultural religious rights and practices. Flathead National Forest has consulted with the Flathead (Salish) and Kootenai Cultural Committees of the Confederated Salish/Kootenai tribes* and will continue to do so under all alternatives. Resource development oriented alternatives have a higher potential for impacting cultural sites than others.

Regardless of the alternative, the Flathead National Forest lands will be inventoried for cultural resources prior to any ground disturbing activities. The funding levels and total acres that would be subject to timber harvest as they vary by alternative have the greatest impacts on the cultural resources of the Forest. Alternatives with higher levels of funding for management provide more opportunities for Forest-wide identification of cultural sites than low funded alternatives. In addition, some site enhancement and interpretation could be accomplished. Those alternatives which require a high level of ground disturbing activities to meet management objectives require a high degree of site specific cultural resource inventory responsive to project activities.

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The protection given to cultural resource sites will have some effect on long-term productivity. Even though cultural surveys will be made prior to ground-disturbing activities, these surveys may not always be successful in finding a cultural resource prior to the time the activities occur. Should this happen, the ground-disturbing activity will be delayed while the area is inventoried and evaluated. Analysis of the results of this inventory may show that the activity needs to be diverted away from the site or that the resource needs to be mitigated by standard archaeological methods before the activity proceeds. This can cause delay and if the area is to be completely protected, will affect the long-term productivity of the site.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Ground-disturbing activities may impact a cultural resource site missed in preactivity inventories resulting in an irretrievable loss of information or artifacts.

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* See Appendix A, and the Flathead National Forest planning records, Kalispell, Montana.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

Some ground-disturbing activities will inadvertently enter and disturb some cultural resource sites despite the care and intensity of surveys prior to the beginning of these activities.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

The management of the cultural resource should have little effect on other planning efforts adjacent to the Forest.

7. ENERGY REQUIREMENTS

Managing the cultural resource will require little energy expenditure. Some travel will be necessary in the surveys and some energy may be used excavating or documenting sites that are located.

G. VISUAL RESOURCE

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

This section has been revised to reflect the acreage change shown for the new Preferred Alternative. Alternative 17 increased visual quality in the Noisy Face Geographic Unit by reducing the timber base, reducing the scheduled Decade 1 harvest in the unit, and increasing visual quality in winter range emphasis areas. Other changes consisted primarily of reducing visual quality objectives in less critical areas in consideration of winter range needs and economics.

2. ENVIRONMENTAL CONSEQUENCES

Visual quality objectives help to determine the degree of alteration acceptable in the Forest landscape. Objectives include preservation, retention, partial retention, modification, or maximum modification of the landscape (see the glossary for definitions). Objectives are determined in part by how easily visible an area is and sensitivity of the view based on numbers and type of viewers. These objectives may constrain Forest management activities, especially timber management, depending upon the degree to which the Forest's landscape is to remain natural in appearance. Carefully designed vegetative management, including timber harvest, can be used to enhance or maintain the visual quality of an area (Hillard, 1980; Forest Service, National Forest Landscape Management 2(5) (Timber), 1978). The visual resource management program has the following effects on other resources.

Timber Harvest Methods - Timber harvest can be used to improve the visual landscape, creating scenic views and eliminating the tunnel effects associated with roads going through dense stands of timber. Carefully designed timber harvest areas can add pleasing variety to the landscape.

Constraining timber harvest activities to meet retention and partial retention visual quality objectives increases the costs of timber sale preparation and administration, road design and construction, logging, slash disposal, and site preparation (Snow, 1982). Increases in management costs affect the present net value of the Forest.

A FORPLAN computer run was made that duplicated the land designations and management activities schedule of Alternative 8 but without the visual quality constraints. This run estimated the decrease in PNV--the opportunity cost--associated with retention and partial retention visual quality management prescriptions.

Retention and partial retention prescriptions were used on about 60,000 acres of the Forest in the Preferred Alternative (See Table IV-7). The analysis, summarized below, indicates that an opportunity cost of 10.2 million dollars (discounted over the 150-year planning horizon) results from the visual quality prescriptions. The timber harvest volume tradeoff was 1.7 MMBF/year in long-term sustained yield. This opportunity cost cannot be equated only with the visual quality objectives. There are also other nonpriced benefits associated with the visual prescriptions including nongame wildlife habitat, recreation opportunities, hydrology, and soils.

TABLE IV-7 Visual Quality Management Prescription Acres - Flathead National Forest

Visual Quality Prescriptions	Alternative								
	1	2	3	4	5	6	7CD	8	9
	....................Thousand Acres....................								
Retention	9	16	11	20	8	0	31	10	0
Partial Retention	41	9	126	6	17	0	81	62	0
Total	50	25	137	26	25	0	112	72	0

Visual Quality Prescriptions	Alternative							
	10	11	12	13	14	15	16	17 PA
	................Thousand Acres....................							
Retention	8	10	9	9	9	9	9	4
Partial Retention	18	62	62	62	61	61	39	56
Total	26	72	71	70	70	70	48	60

Road Location and Design - Maintenance of retention and partial retention visual quality objectives while allowing road construction to occur can increase road construction costs. Road design and location must consider the visual impacts; therefore, design and location options are limited (Forest Service, National Forest Landscape Management 2(4), Roads, 1977). If landscape features can be used to mitigate the impacts of roads on the visual resource, construction costs can be reduced.

PNV - Even though visual quality objectives can be met in most situations without prohibiting other resource activities, added care is usually needed, resulting in higher costs. These higher costs have the greatest effect on timber management activities. Alternative 3 would have these higher costs and consequently a PNV most impacted by visual quality concerns. To a lesser extent, Current Direction and the Preferred Alternative have visual quality objectives which would reduce the PNV. Alternative 6 would have a PNV unaffected by visual quality constraints.

Mineral Activities - Special stipulations designed to protect the esthetic values of the Forest would be used for all surface disturbing activities and facilities to meet the visual quality objectives of the alternative. Alternative 3 would require that these stipulations be attached to the most acres of all the alternatives because of the high number of acres managed to meet retention and partial retention visual quality objectives. Alternative 6 would require the fewest esthetic stipulations (see Appendix D).

Social and Economic - Visual resource management is directed toward achieving a balance between resource utilization and a continuing supply of positive visual experiences to the public. Protection and enhancement of visual quality in the frequently seen areas of the Forest ensures that local residents and visitors will be provided an esthetically pleasing environment, now and in the future.

The Preferred Alternative would maintain the visual quality of the Forest in both the short and long term. Management activities would generally not dominate visually sensitive landscapes. Timber harvest and other management activities would be used to enhance views. The current situation in frequently viewed areas would be maintained or improved.

At the other end of the spectrum, Alternative 6 would modify the visual environment the most of all the alternatives. The general appearance of the Forest would change to one where roading and timber management activities dominated the landscape. People would not perceive the Forest as a place where esthetics were protected.

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The long-term sustained yield capacity and PNV are decreased because timber management options are slightly reduced by the constraints imposed to ensure meeting the visual quality objectives.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Under some alternatives, irretrievable commitments of resources in the short term occur to a greater extent than under others. For example, visual quality under Alternatives 2, 4, and 6 is primarily committed to modification of the natural-appearing landscape, foregoing opportunities to maintain retention or partial retention levels of visual quality. Under the Preferred Alternative, much more of the Forest would be retained or partially retained as natural appearing.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

There will be reduced PNV due to visual resource management objectives which may not contribute to the PNV of the Forest.

The most visually sensitive areas require low road densities if visual quality objectives are to be achieved. Careful attention and coordination between road location and logging system planning will be required.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

Management of the visual resource should have little effect on other planning efforts adjacent to the Forest.

7. ENERGY REQUIREMENTS

The only energy requirements are those associated with other resources.

H. THREATENED AND ENDANGERED SPECIES

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

This section has been changed to reflect:

- The addition of the mountain caribou as a concern.
- The addition of specific guidelines for the gray wolf, and that establishment of a successfully breeding pack in the North Fork has been confirmed.
- The removal of the Trail Creek Grizzly Bear Management Area from the suitable timber base.
- The change of some DEIS Situation 2 habitat classification to Situation 1, primarily in the Swan Valley and Columbia Mountain areas.

2. ENVIRONMENTAL CONSEQUENCES

Management objectives oriented toward improvement or maintenance of habitat for one species limit options for management of habitats for other species (Leopold, 1933). At this time, although specific guidelines have been developed for the gray wolf (see the Forest Plan document, Chapter II), habitat potential is linked to the Forest's management of habitat for grizzly bears. Maintenance of security from human disturbance is believed to constitute the most critical habitat need of the existing gray wolf population (Ream, 1978). The grizzly bear habitat management objectives provide security. Thus, although grizzly bear habitat management may preclude some management options for gray wolves, the current needs of the gray wolf population are satisfied.

The bald eagle and peregrine falcon have been listed as endangered under the Endangered Species Act. The mountain caribou is presently under status review and will be protected if listed under this Act. The law specifies habitat of these species will be protected. This will be done under all alternatives through incorporation of Forest-wide guidelines.*

Roadless Resource - Based on current information concerning bear habitat management needs, there would always be a roadless resource of 5,000 contiguous acres or more maintained in both the Thompson Seton and Tuchuck areas in alternatives (1, 3, 8, 11 - 13, and 17) where these roadless areas are designated as grizzly bear management emphasis.

Range - Under Alternative 1, 16, and, to a lesser extent, under the other Alternatives including the Preferred Alternative, management direction would preclude cattle grazing where grizzly bear habitat management objectives are emphasized to avoid potential conflicts. The standards for grizzly bear management in the Forest Plan provide direction for range allotment use in Situation 1 and 2 areas. Allotments will be analyzed through biological evaluations. Currently, only a portion of one active grazing allotment exists in these areas. Because this allotment occurs in a grizzly bear travel corridor and only a portion of the total allotment is affected, cattle use would be redistributed rather than reduced on the allotment if a problem occurs.

Timber - The Flathead National Forest Grizzly Bear and Gray Wolf Management Guidelines** were patterned after the "Yellowstone Grizzly Bear Management Guidelines" (USDA - Forest Service, USDI - Park Service, 1979). This implements the intent of the 1973 Endangered Species Act to achieve recovery of the grizzly bear. Although the majority of the guidelines require project level information, their application has resulted in a revised Decade 1 timber sale offering schedule as displayed in the Forest Plan, Appendix M. The overall effect of the guidelines will be to increase timber management costs due to additional planning and administration costs and restricted operating seasons.

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* Forest-wide guidelines for threatened and endangered species are presented in the Forest Plan.

** Refer to the Forest Plan, Chapter II.

Grizzly bear and gray wolf habitat management also constrains timber management options in areas where these species and their habitat needs are to be the primary focus of Forest management. Timber harvest can be used to create more favorable quality, quantity, and distribution of forage areas (Zager, 1980).

The scheduling and distribution of harvest can be governed by grizzly bear habitat management objectives*. Over time, the grizzly bear management emphasis applied to a given area would result in some reduction in timber volume and value because high intensity timber management is not compatible with grizzly bear objectives.

Management direction for the Trail Creek Grizzly Bear Management Area, in regards to timber, is designed to limit activities until more is known about the effects of activities on the grizzly bear. Timber harvest is, therefore, unscheduled and the Trail Creek Grizzly Bear Management Area is removed from the suitable timber base in the Preferred Alternative.

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* Desired habitat for grizzly bears includes the following habitat components:

Burns - particularly catastrophic fires including high elevation areas that produce fruit-bearing shrubs.

Meadows - naturally occurring, open, concave, wet or dry sites at all elevations. These are particularly important at low elevations as spring forage areas.

Riparian areas - all riparian areas that provide succulent vegetation suitable as bear food.

Ridge tops - most major and many minor mountain range and ridge divides. These are important as travel routes and links between other habitat components.

Shrubfields - essentially permanent areas of shrubs created by fire or snow pack at high elevation.

Sidehill parks - naturally open, sparsely timbered areas.

Snow chutes - moist areas, very productive for bear foods.

Scree/talus - unstable loose rock areas, productive for bear foods.

Timber - with either an open or closed canopy. These areas are important as connectors between habitat components.

Mineral Activities - The grizzly bear and gray wolf guidelines will affect oil and gas exploration and development by increasing operating costs and limiting the amount of development. Because oil and gas development is only beginning in the Flathead, a history of monitoring experience of oil and gas development effects on grizzly bear in the Forest's environment is not available. Based on current information, it is planned for oil and gas activities to be coordinated with timber management activities in grizzly bear habitat. As a result, it is anticipated that oil and gas development will be able to proceed but delays may occur where coordination in the scheduling of activities in adjacent areas is necessary.

Management direction for the Trail Creek Grizzly Management Area* would be designed to limit activities to current and historic uses until more is known about the grizzly bear's reaction to man's activities. This would result in recommendations to the Bureau of Land Management for withdrawal of mineral entry during Decade 1 on the unleased portion of the area in the Preferred Alternative. Seismic projects would be approved if a biological assessment indicated the project would not adversely effect grizzly bear populations.

Under Alternatives 1, 3, 11-15, 16, and the Preferred Alternative, habitat management for grizzly bear and gray wolf would affect oil and gas activities further by requiring these activities to follow special stipulations that constrain the timing and spacing of activities (Oil and Gas Leasing, Environmental Assessment, Flathead National Forest, 1980). These requirements increase the cost of mining or oil and gas operations and, in some cases, may preclude the activity altogether.

Under all alternatives, compliance with the Endangered Species Act requires use of special timing stipulations on all National Forest System land that is considered Situation 1 grizzly bear habitat (occupied habitat which has all the necessary habitat components) whatever the primary management emphasis. See Table II-18 or Appendix D for a breakdown of acres affected by special stipulations.

Road Management - Any roads constructed in grizzly bear habitat management areas would be closed following completion of these activities. In some instances, the road beds would be planted to provide foraging areas. Existing roads could also be closed if necessary to maintain or improve security for bears (Management Prescriptions, Flathead National Forest planning records).

Under Alternatives 1, 3, 11-13, 16, and the Preferred Alternative, public access to the grizzly bear management areas via existing roads would not increase over the existing situation and may be reduced. Alternative 5 also would not increase public access beyond existing levels to provide security to grizzly bears and other wildlife. Alternatives 2, 4, 6, and Current Direction do not have grizzly bear management objectives that require restricted access.

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* See Alternative 17, Preferred Alternative, Resource Objectives.

PNV - As shown above for the Preferred Alternative, grizzly bear habitat management decreases the PNV of the Forest due to the constraints imposed on timber management. Timber harvest in areas designated for grizzly bear habitat management would be designed and scheduled to meet grizzly bear management objectives. These do not correspond with maximizing PNV objectives. The land designations of Alternative 1 are assumed to have greater impacts on the potential PNV because more suitable land is managed to meet grizzly bear objectives. Of the seven alternatives which manage areas specifically for grizzly bear habitat, Alternative 3 would have the least impact, because few potentially suitable acres are involved.

Dispersed Recreation - Effects of the grizzly bear and gray wolf management guidelines on recreation initially will be to increase costs of planning and administering recreation projects. Ultimately, the guidelines may result in reduced recreational capacity of the Forest if future monitoring or research indicates recreational use conflicts with bear or wolf behavior and use of available habitat.

Alternatives 1, 16, and, to a lesser extent, Alternative 8, 11-13, and 17 designates currently unroaded acres on Glacier View and Spotted Bear Districts as roaded management that emphasizes grizzly bear habitat maintenance and improvement. Any prescribed burning, timber harvest, and associated road construction used to achieve grizzly bear management objectives would alter the primitive unroaded recreation settings associated with these areas. The particular combination of practices used in any alternative would depend on project level habitat component analysis and biological assessment of each local project area.

Grizzly bear and gray wolf habitat management objectives also require motorized road access restrictions (Jonkel, 1975). These restrictions affect roaded recreation opportunities. Restrictions on motorized access may be seasonal (spring and fall) or year-round depending on the specific area and management objectives.

Other Wildlife - Grizzly bear habitat management limits options to manage mule deer/elk winter range on the Spotted Bear District under Alternative 1 and 16. Although security from human disturbance and some forage would be provided, grizzly bear habitat management objectives are different than mule deer/elk habitat management.

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The timber resource will be harvested at less than maximum intensity. Native productivity of the timber resource in these areas will be maintained, but some opportunities to increase production through intensive management will be foregone.

Livestock grazing in occupied grizzly habitat will require special mitigating measures to assure that activities are compatible with grizzly bear management objectives. Intensive range management practices which could significantly increase livestock production will be foregone in occupied areas where bear and human confrontations are likely.

Dispersed recreation activity may need to be restricted in occupied areas where bear and human confrontations are likely.

Nesting sites for bald eagles will be protected by managing buffer zones around the sites. Activities are restricted within one-fourth mile of known active bald eagle or peregrine falcon nests. This represents a minor amount of land which would be unavailable for other purposes.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The T & E (Threatened and Endangered) species habitats which are given protection will have an effect on the timber and range resources within the areas. Since the commitment to protect these species is irreversible in the foreseeable future, the vegetation made unavailable for harvest represents an irretrievable loss.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

The PNV of the Forest is lowered due to increased costs and constraints on priced benefit production.

Any activity which causes a loss to a T & E species population, despite the mitigation measure taken to protect their habitat, is considered as an adverse effect to the continued existence of the species. The intent is to avoid all significant adverse situations on T & E species habitat that can be foreseen from all proposed management activities. There will be no significant adverse effects on watershed, soils, or basic ecosystem productivity from habitat management for threatened and endangered or sensitive (rare) species. Increased probability of bear-human confrontations may result if bear populations increase along with a continuation of the past trend of increasing human occupancy of bear habitat.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

Forest Service management for T & E species will continue to coordinate with and support the policy and direction of the Interagency Grizzly Bear Committee and USF&WS Species Recovery Plans.

7. ENERGY REQUIREMENTS

There are no known energy requirements associated with T & E species habitat management.

I. WILDLIFE HABITAT IMPROVEMENT

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

This section has been changed to reflect:

- Addition of 7,415 acres to big-game winter range management in Alternative 17.

- Increase in riparian wildlife management emphasis of 13,558 acres in the Preferred Alternative.
- Table IV-8 has been changed to reflect Alternative 17 (Preferred Alternative) and new Departure outputs.

2. ENVIRONMENTAL CONSEQUENCES

Wildlife management objectives involve the maintenance and improvement of wildlife habitat. Activities include vegetation management for increasing the amount of shrubs, forbs, and grasses available to various species as well as protecting some sites as they exist for species dependent upon old growth or riparian environments. Maintaining security and thermal cover for some animals and minimizing the disturbances of human activity in important habitats are also habitat improvement objectives.

Table IV-8 displays average annual acres of wildlife habitat improvement for each alternative. These wildlife habitat improvement management activities affect other resources in the following ways.

TABLE IV-8 Annual Wildlife Habitat Improvement (Acres)* - Flathead National Forest

Benchmark and	Wildlife for Decades				
Alternatives	1	2	3	4	5
1	217	234	250	272	298
2	163	182	201	243	267
3	182	196	211	246	274
4	144	154	175	210	248
5	143	157	171	191	212
6	121	147	163	192	228
7 CD	211	234	255	279	297
8	214	230	248	283	314
9	123	142	158	181	215
10	143	157	171	191	212
11	214	230	248	283	314
12	214	230	248	283	314
13	214	230	248	283	314
14	214	230	248	283	314
15	214	230	248	283	314
16	217	234	250	272	298
17 PA	214	230	248	283	314
PNV	123	142	158	181	215
Timber	222	266	308	354	394
DEP	214	230	248	283	314

* Does not include Threatened and Endangered Species Habitat Improvement Acres.

Roadless Resource - Wildlife habitat improvement can affect the wilderness attributes of the roadless resource. Habitat improvement practices generally modify the natural integrity and appearance of land and vegetation. Some practices such as fisheries habitat improvement and prescribed burning of brush fields are often natural appearing so that man's effects are not dominating. Others, such as big-game winter range habitat improvement in timbered areas, involve road building and timber harvest which results in roadless and wilderness values to be foregone. Suitable areas designated as mule deer/elk winter range, whitetailed deer winter range, and grizzly bear are examples. These same management emphases in areas unsuitable for timber management may reduce wilderness attributes due to habitat management activities involving prescribed burning, use of chainsaws, and helicopters.

Timber - In areas where big-game winter range management is to be emphasized, attaining desired cover/forage relationships and high levels of forage production require that the scheduling and distribution of timber harvest meet specified elk and mule deer or whitetailed deer management objectives (Thomas, 1979; Lyon, 1975-1979; Brown, et al. 1980). The distribution of tree openings must be done in a way that makes all forage utilizable. Tree openings cannot exceed a specified size. A distribution of timber age classes on whitetailed deer winter range must be maintained (see Flathead National Forest Winter Range Prescriptions, planning records).

These constraints affect potential timber yield, causing a decrease in long-term sustained yield for the Forest of, at most, 10 percent (see the Wildlife Benchmark discussion, Appendix B). They also restrict timber management options such as scheduling and sale layout, thereby increasing costs. These constraints would most affect potential timber yield, management options, and costs under Alternative 5 and 17 because these alternatives meets 98 to 100 percent of the Forest's potential winter range objectives. Alternative 6 would be least affected.

The degree to which an existing situation deviates from the best possible condition determines the effect of winter range management objectives on timber management in a site-specific way. The existing condition of winter ranges on the Flathead National Forest varies depending upon the historic harvest activities, tree regeneration stages, and adjacent management activities.

Visual Quality - Visual quality is impacted by management of mule deer and elk winter ranges if they are in areas where only a retention or partial retention visual quality objective would protect the visually sensitive landscape. This is because attainment of correct cover/forage relationships may require tree openings that would be larger than acceptable if a natural-appearing landscape was to be retained (Management Prescriptions, Flathead National Forest planning records). Tree openings up to 10 acres in size could occur on whitetailed deer winter range, and openings up to 40 acres in size could occur on mule deer/elk winter range, depending on site-specific conditions. This effect could occur under all alternatives, especially Alternative 5 and 17 which manages 98 to 100 percent of all potential winter range to meet winter range objectives.

PNV - Big-game winter habitat management results in higher timber management costs due to the timber harvest scheduling constraints necessary to maintain correct cover and forage relationships and the habitat improvement activities. Smaller harvest units necessary to optimize whitetailed deer winter habitat increase costs further.

Road Management - Motorized access restrictions protect big game from human disturbance (Flynn, 1982; Brown, et al. 1980). Management objectives for mule deer, elk, and whitetailed deer winter ranges require restrictions that affect public motorized access to the Forest during the fall and winter months. Restrictions at other times of the year, generally in different areas, would provide security to animals on calving areas and critical summer ranges. Alternative 5, managing 98 percent of the potential winter range to meet winter range objectives, would have more motorized access restrictions than Alternative 6, which manages only 50 percent of mule deer and elk and 27 percent of whitetailed deer potential winter ranges.

In addition to different levels of winter range road restrictions, alternatives vary in the extent of motorized access restrictions employed elsewhere on the Forest. Alternatives 1, 5, 10, and 16 would most restrict public motorized access year-round to achieve big game and other wildlife management objectives. People's opportunities to use roads to access National Forest System lands would not expand beyond the existing situation.

Alternatives 2, 4, and 6 would least restrict motorized public access. Few restrictions would be imposed to achieve big-game management objectives. The public's opportunities to access the Forest via roads would expand beyond the existing situation by roughly 100 percent.

Soil and Water - Big-game habitat management activities increase sediment production due to the timber harvest activities and associated road construction that is done to enhance cover/forage relationships.

Air Quality - Wildlife management does not have a significant effect on air quality except during the spring and fall when habitat is burned to produce desirable browse species. Differences between alternatives are not significant. Under all alternatives, burning would meet with State of Montana Air Quality Standards, in compliance with the Clean Air Act.

Range - Big-game winter range management objectives require a 50 percent reduction in the amount of forage available to cattle in order to maintain productive plant vigor (Williamson, 1981-82). Most alternatives including the Preferred Alternative would reduce permitted AUM's in specific areas due to this constraint.

This reduction in nonwilderness permitted grazing will affect, at most, three to five Forest permittees who depend on the grazing allotments. In recent years, however, the Forest's available AUM's have not been fully utilized; therefore, use could be shifted to other available allotments as a mitigation measure.

Social and Economic - Increased populations of big game would provide high quality recreation opportunities for people who want to hunt, photograph, or observe wildlife.

Larger big-game populations have the potential for greater hunting license fee receipts to the State, which are a major source of revenue for the Montana Department of Fish, Wildlife, and Parks.

Table IV-9 compares alternatives relative to hunter opportunities. This table provides a relative comparison of alternatives' ability to respond to soical and economic needs based on big-game populations.

TABLE IV-9 Hunter Days of Deer and Elk Hunting Opportunities (MRVD) - Flathead National Forest

Alternative/	Decade				
Benchmark	1	2	3	4	5
1	45.0	44.6	51.3	50.2	52.2
2	30.0	31.3	40.5	22.1	24.1
3	45.0	47.8	63.0	68.8	75.6
4	45.0	47.0	57.3	19.6	21.2
5	45.0	46.0	55.9	59.8	67.2
6	30.0	28.8	30.5	21.0	19.8
7 CD	30.0	30.7	34.0	34.6	33.7
8	45.0	44.9	48.2	61.1	73.7
9	30.0	28.8	14.7	15.9	17.3
10	45.0	45.8	54.9	57.9	64.0
11	45.0	45.0	55.9	63.6	73.7
12	45.0	44.9	56.0	62.1	73.9
13	45.0	44.4	55.8	63.4	75.5
14	45.0	44.4	55.9	63.1	75.5
15	45.0	44.3	53.7	60.6	70.8
16	45.0	44.0	47.6	46.0	46.2
17 PA	45.0	46.7	54.9	60.1	63.4
Departure	45.0	46.0	54.7	59.4	63.8
PNV	30.0	28.8	30.5	21.0	19.8

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Prescribed burning retains the vegetation in an early stage of plant succession. Productivity of grasses, forbs, and shrubs on winter ranges is reduced more rapidly when timber regeneration is accomplished through artificial planting. Continued browse burning reduces or eliminates the potential timber productivity of a site when it is suitable for timber production.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Prescribed burning does not constitute an irreversible commitment of resources. No tentatively suitable timberlands are planned for permanent brush production.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

The soil surface will be exposed by burning for a few days or weeks and there is a slight risk of accelerated erosion. Project analysis of the proposed burn areas should identify the restrictions needed to minimize this problem. Air quality degradation is similar to that from slash burning, but the acreage proposed for burning is small and smoke generation will be slight. The blackened areas from burning will create a visual nuisance for short periods of time, especially along frequently traveled roadways, but these visual effects will be rapidly reduced due to quick regrowth of vegetation. Some short-term surface soil erosion may result from constructed fire control lines.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

The mission of the Montana Department of Fish, Wildlife, and Parks differs from the mission of the Flathead National Forest. The Forest manages the habitat; the Department manages the animals. Plans for the management of the wildlife occupying Forest land, therefore, may conflict and special efforts to address differences will be necessary. Annual program coordination meetings and consultation with appropriate department officials will be held on specific project designs and annual programs of work.

7. ENERGY REQUIREMENTS

Energy will be used to burn, plant, and seed. Because of the small acreage involved, this energy use will amount to only a small percentage of the total energy used on the Forest.

J. FISH HABITAT IMPROVEMENT

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

Table IV-10 has been changed to reflect Alternative 17 (Preferred Alternative) and the new Departure outputs.

2. ENVIRONMENTAL CONSEQUENCES

Fisheries habitat improvement objectives include minimizing sediment loading in streams, fish structure construction and maintenance, and channel stabilization. Table IV-10 displays the total acres of fish habitat improvement planned annually for each alternative. Management activities associated with habitat improvement affect other resources in the following ways.

TABLE IV-10 Annual Fish Habitat Improvement (Acres) - Flathead National Forest

	Fish for Decades				
Alternative	1	2	3	4	5
1	89.2	89.2	89.2	89.2	89.2
2	42.2	42.2	42.2	42.2	42.2
3	71.0	71.0	71.0	71.0	71.0
4	89.2	89.2	89.2	89.2	107.5
5	89.2	89.2	89.2	89.2	89.2
6	4.8	4.8	4.8	4.8	4.8
7 CD	6.7	6.7	6.7	6.7	6.7
8	71.0	71.0	71.0	71.0	71.0
9	4.8	4.8	4.8	4.8	4.8
10	89.2	89.2	89.2	89.2	89.2
11	71.0	71.0	71.0	71.0	71.0
12	71.0	71.0	71.0	71.0	71.0
13	71.0	71.0	71.0	71.0	71.0
14	71.0	71.0	71.0	71.0	71.0
15	71.0	71.0	71.0	71.0	71.0
16	89.2	89.2	89.2	89.2	89.2
17 PA	71.0	71.0	71.0	71.0	71.0
Timber	5.8	5.8	5.8	5.8	5.8
DEP	71.0	71.0	71.0	71.0	71.0
PNV	4.8	4.8	4.8	4.8	4.8

Timber - Under all alternatives, timber management options in riparian areas will be limited to maintain both fisheries and wildlife habitat. Management will be designed to allow natural log recruitment to streams for pool building (see Management Prescriptions, Flathead Forest planning records). Under Alternatives 1, 4, 5, 6, 10, and 16, timber harvest will be restricted to salvage harvesting which is unscheduled (unregulated) timber volume in all riparian areas. Under Alternatives 2, 3, 8, 11-15, and the Preferred Alternative in watersheds with important fisheries values, only salvage harvesting would be allowed. In the rest of the riparian areas under these alternatives and in most of the riparian areas under Current Direction, timber harvest would be scheduled. Selection harvest would be the primary harvest method.

Roads - Fisheries management objectives under all alternatives require that fish passage be provided on all bridge and culvert installations where fish spawning areas exist upstream from the construction site. In addition, construction will occur only during those seasons when disturbance to migrating fish and spawning areas would be minimal. These requirements must be met to reduce the impacts of road construction on the fish populations in Flathead National Forest streams (State of

Montana, Department of Fish, Wildlife, and Parks, 1980, 1981, 1982; FSM 2600-- Wildlife and Fish Management).

Under Alternatives 1, 5, 10, 16, and the Preferred Alternative, road closures and revegetation of roadbeds following timber harvest in sensitive drainages will mitigate impacts on water quality and important fisheries habitat.

Mineral Activities - The effects of fisheries management on minerals and oil and gas would be the same under all alternatives. New road construction would be seasonally restricted in riparian areas to protect migratory fisheries. No surface disturbing activities associated with mineral or oil and gas exploration and development would be allowed in riparian areas.

Recreation - Under all alternatives, fish habitat management will enhance recreation opportunities by emphasizing under-used fisheries such as Hungry Horse Reservoir through visitor information services. Fisheries management in combination with the mitigation of timber harvest activities (including road construction) and livestock grazing can provide quality recreational fishing opportunities both on and off the Forest. Still, under some alternatives, recreational opportunities decline from the existing situation as catchable trout populations in nonwilderness streams decline.

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Projects associated with increasing fish passage will permit fish to use stream segments which are presently unavailable. Habitat improvement work will increase existing stream habitat capacities and possibly productivity. Fish habitat will be maintained above existing levels in many areas.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

There are few irreversible or irretrievable commitment of resources associated with fish habitat improvement projects.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

Streambanks and bottoms will be disturbed when improvement structures are installed. Some reduction in stream flows may result if spawning channels or rearing ponds are constructed. These effects should have minor effects on the aquatic life which occupy these areas.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

All fish habitat improvement projects will be coordinated with the Montana Department of Fish, Wildlife, and Parks. No conflicts exist because the Forest goal to improve fish habitat is shared by both agencies.

7. ENERGY REQUIREMENTS

Some energy will be required to remove barriers and to construct and maintain fish habitat improvement structures. This demand will be a minor portion of the total energy use of the Forest.

K. UTILITY TRANSPORTATION CORRIDORS

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

Grizzly bear management areas were added to the utility corridor avoidance list as a result of public comment. Alternative 17 provides viable windows for all BPA (Bonneville Power Administration) targeted power corridor areas.

2. ENVIRONMENTAL CONSEQUENCES

An analysis has been made to define the kinds of land which should be avoided in permitting construction of linear right-of-way utility lines, oil and gas pipelines, and communication lines. The analysis is based on information contained in the draft Pacific Northwest Long Range East-West Energy Corridor Study, Phase 1, Part A-Rocky Mountains, Part B-Cascade Mountains, Bonneville Power Adminstration, December 1977. This analysis inventoried existing facilities and potential corridor locations. Guidance for the analysis is contained in a Forest Service Region 1, letter to the Forests, on corridor planning guidance (Flathead National Forest planning records). Avoidance areas are defined as areas where establishment and use conflict with land use and management objectives. Exclusion areas are defined as areas where such facilities are not allowed. Windows are outside avoidance and exclusion areas, where land use, management, and topographic constraints would permit consideration of utility transportation corridors.

Following is a list of land use designations which exclude or which should be avoided by utilility corridors on the Flathead National Forest:

Exclusion Areas

Bob Marshall - Great Bear Wildernesses
Mission Mountain Wilderness

Avoidance Areas

a. Where Corridors Conflict

Research Natural Areas
Amenity Values
Grizzly Bear Management Areas
Administrative Sites
Developed Recreation Areas
Big Mountain Winter Sports Area

Condon Tree Improvement Area
Timber Management w/Soil Problems
Jewel Basin Hiking Area
Dispersed Recreation Areas

b. Protected Through Legislative Action

Wild and Scenic River
Coram Experimental Forest
NRT's (Included in Dispersed Recreation areas above)

The 1977 analysis by Bonneville Power Adminstration identified five corridor segments (R1-R5) for consideration on the Flathead National Forest. Two of these corridors involve what is now the Great Bear Wilderness.

It was concluded in classifying the Great Bear Wilderness that a utility corridor was not accepted within the classified area. Therefore, the portion of Segments R-1 and R-2 across the Great Bear Wilderness are now exclusion areas with no windows. Because Segments R-1 and R-2 have no windows across the Great Bear Wilderness, Segment R-3 across the Swan Range was also considered to be invalid in the Forest planning process and no windows were identified or described. Segments R-2 (Bear Creek Portion), R-4 (Bad Rock Canyon), and R-5 (North Fork) were considered viable corridors of those proposed in the 1977 BPA report. Existing corridors and potential windows for these corridor segments are described below:

Six areas defined as windows through the planning process are described below. They are shown on maps referenced in Appendix J of the Forest Plan (Exhibit J-2). Existing transmission lines are shown on overlays (Exhibit J-3.) Exhibits J-2 and J-3 are filed in the Flathead National Forest planning records. Windows are areas which would be available under all alternatives for utility corridors, however, specific constraints would vary.

Window No. 1 is located at the head of Yakinikak Creek on the Whitefish Divide. Transmission facilities could parallel the road across this constrained area. The impact of transmission facilities across this area would be mitigated most by being adjacent to the transportation facility. This window is in Corridor Segment R-5 of the PNLRE-WECS (Pacific Northwest Long Range East-West Energy Corridor Study), Bonneville Power Administration, 1977. This area is constrained by management direction to maintain a semiprimitive nonmotorized recreation setting along the Whitefish Divide in Alternative 17.

Window No. 2 is located at the head of Whale Creek to the Whitefish Divide. Transmission facilities could cross this area but would be more difficult to mitigate than Window No. 1 since there are no other facilities present. This window is also in Corridor Segment R-5 of the PNLRE-WECS, BPA, 1977 report. This area is constrained by management direction to maintain a semiprimitive nonmotorized recreation setting along the Whitefish Divide in the Preferred Alternative.

Window No. 3 is located at the head of Red Meadow Creek across the Whitefish Divde and also is in Corridor Segment R-5. Transmission facilities could parallel the road across this constrained area. The impact of transmission facilities across this area would be mitigated most by being adjacent to the transportation facility. This area is constrained by management direction to maintain a semiprimitive nonmotorized recreation setting along the Whitefish Divide in Alternative 17. This window could be reached from the east via the Red Meadow Creek drainage. It would necessitate a corridor to the west across State land plus Flathead and/or Kootenai National Forest land.

Window No. 4 (Corridor Segment R-5) is located just north of Werner Peak across the Whitefish Divide. Transmission facilities could cross this area and be mitigated fairly easily because roads already exist on both sides of and across the divide. This area is constrained by management direction to maintain a semiprimitive nonmotorized recreation setting along the Whitefish Divide in the Preferred Alternative. This window could be reached from the east via the Big Creek drainage. It would necessitate a corridor to the west across State and Burlington Northern land plus Flathead and/or Kootenai National Forest land.

Window No. 5 (Corridor Segment R-4) is located along the South Fork of the Flathead River between Hungry Horse Dam and the Flathead River. Two transmission lines (a 115 kv and a 230 kv) currently extend through this area. Additional facilities could be added without too much more impact. This area is constrained by the management direction to maintain a semiprimitive motorized recreation setting of this general area in the Preferred Alternative.

Window No. 6 is located along U.S. Highway 2 from Coram to Marias Pass. This window involves the Bear Creek portion of Corridor Segment R-2. It is an existing utility corridor constrained along much of its length by the Wild and Scenic River Corridor and intermittent pieces of National Forest land with management direction to maintain semiprimitive nonmotorized or semiprimitive motorized recreation settings. The Great Bear Wilderness, an exclusion area, is along the south side for nearly the entire length of this window. Glacier National Park, also an exclusion area, is along the north side for almost the entire length of this window. A 10-inch diameter natural gas pipeline currently parallels U.S. Highway 2 through this area. A main line of Burlington Northern Railroad also traverses this area. Another underground transmission facility through this area could be mitigated as well as the present pipeline, which has been done very well. An above-ground transmission facility would be more difficult to mitigate but it could be done to some degree.

There are three existing utility corridors on the Forest handling electrical lines that range from 115 to 230 kv. These corridors are from 1.2 to 4.7 miles in length and administered under a Memorandum of Understanding with the Bonneville Power Administration. In addition, Montana Power Company maintains a buried oil and gas line of 40.7 miles.

These uses have no termination date and are revocable only by the Chief of the Forest Service. Under all alternatives, these utility corridor permits would be honored. Other utility transportation corridors may be prepared from time to time and will be considered at the time of proposal.

Utility corridors are proposed upon need and have points of beginning and ending. At the time of proposal, exclusion and avoidance areas will be included in an analyis. Prior to approval of additional new utility transportation corridors, an appropriate analysis will be required to determine the effects of the facility and the supporting road system, and if approved, a final location for the facility. Future applications would be considered on a case-by-case basis.

Corridors in themselves have no impact on the area. Only when these corridors are occupied does the impact occur. Prior to construction of a utility line or oil and gas pipeline, an appropriate analysis would be required to establish the final location of the facility and its supporting roads. At that time, the effects of the facilities would be displayed.

Utility corridors can affect the visual quality of the Forest. Construction activities associated with new transmission lines can adversely affect water quality. These effects would be similar under all alternatives.

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The existence of an unoccupied corridor has no effect on long-term productivity.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The identification of the corridor is not an irreversible or irretrievable commitment of resources; however, as long as the corridor does not cross identified exclusion areas, the possibility of occupation by a utility does exist.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

Until occupation occurs, none are identified.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

None identified.

7. ENERGY REQUIREMENTS

None while the corridor is unoccupied.

L. LANDOWNERSHIP AND ADJUSTMENT

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

There were no significant changes to this section.

2. ENVIRONMENTAL CONSEQUENCES

All alternatives undertake land adjustment programs that comply with specified general landownership adjustment guidelines.* In addition, under each alternative the landownership adjustment program is guided by criteria that are responsive to the management objectives and land designation pattern of that alternative.

Under Alternatives 1, 5, 10, and 11, in addition to the general land adjustment guidelines, landownership adjustments are centered on the pertinent objectives of these alternatives, specifically, protection of unique or scarce resources. Increased emphasis is given to the acquisition of lands or interests in lands that provide better protection of special management areas and resources such as the Great Bear, Bob Marshall, and Mission Mountains Wildernesses; Flathead Wild and Scenic River; Jewel Basin; threatened or endangered species and their habitats; and roadless dispersed recreation areas. Special emphasis is given to continuance or resumption of the L&WC (Land and Water Conservation Fund). Priority is given to acquisition of Plum Creek Timber Company, Inc. lands in Glacier Slough and private lands in areas where grizzly bear habitat was emphasized. Under Alternatives 5 and 10, acquisition of some Plum Creek Timber Company, Inc. lands in the Swan Valley to improve winter range habitat opportunities would be undertaken.

Under Alternatives 2 and 6, landownership adjustments are made to improve the public's opportunities to use and develop National Forest resources. Emphasis is given to increased acquisition of legal access to all National Forest System lands to facilitate timber harvest, firewood cutting, hunting access and dispersed recreation. Lands acquired in land exchange generally include lands suitable for commercial timber production and big-game winter range to increase the huntable population. Exchanges that allow large scale consolidation of private lands are not permitted under Alternative 2, because this may reduce public recreation opportunities on non-Federal land. Alternative 6 finds such consolidation more compatible with the established management direction.

Alternatives 3, 8, 11-15, and the Preferred Alternative (Alternative 17) utilize land adjustments to provide the level of timber production that responds to local industry's needs as well as increased recreation opportunities. Emphasis is placed on acquisition of land and interests in land to allow full access to all National Forest recreation areas and commercial timberland areas. Efforts are made to acquire access sites for the Flathead Wild and Scenic River and along the Mission Mountains Wilderness. Emphasis is also given to acquisition of special wildlife management areas, riparian habitat, and endangered species habitat. Whenever possible, land exchanges will trade like lands; i.e., timberland for timberland. The objective is to maintain the current level of commercial forest land in order to maintain a stable timber supply for local mills. Special emphasis would be given to continue or resume the Land and Water Conservation Fund land acquisition program on the Flathead Wild and Scenic River program.

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* See the Forest Plan for the specific landownership guidelines.

The objectives of the land adjustment program under Alternative 4 are to provide the best opportunities to manage the Forest in a businesslike manner. The land exchange program would emphasize consolidation of ownership into the most efficient management units. Reduction in corners and boundary lines, minimizing the chance of trespass, and reducing the number of needed special-use permits would be goals. Priority would be given to acquiring additional commercial timberland in land exchanges. Exchanges will be larger to reduce unit costs. Isolated trails will be disposed of. Use of cost share will be implemented to a more substantial degree. Wild and Scenic River acquisition will be reduced to meet minimum river management objectives. Acquisitions will emphasize donations.

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Lands which enter private ownership following exchange will be managed as the new owner desires. Lands obtained by the Forest Service through exchange will be managed to meet the goals of the Forest Plan.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Lands entering private ownership through exchange are committed to whatever the new owner desires. Lands obtained by the Forest Service will be committed to particular uses according to the land management plan in effect at the time.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

None identified.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

None identified.

7. ENERGY REQUIREMENTS

Little or no energy is used in land exchange.

M. RIGHTS-OF-WAY

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

This section did not appear in the Draft EIS documents. There were no significant changes to the Rights-of-Way program between the draft and final documents.

2. ENVIRONMENTAL CONSEQUENCES

Forest Service road and trail rights-of-way are acquired by direct purchase from private landowners and through cost share agreements with large corporate landowners. These easements are generally acquired in support of the Forest's timber program, and to a lesser degree, recreation access.

The Forest acquires about 15-20 easements per year and impacts approximately 8 acres of private land per mile of road constructed. This program will tend to decrease over time as road systems are completed and land ownership patterns are consolidated through change.

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Rights-of-way provide the opportunity for the Forest to utilize resources and maintain or enhance long-term productivity of a large number of acres, by causing a substantial impact on a small number of acres. This land would otherwise be generally unavailable for management activities due to high costs involved in alternative access routes.

The Cost Share Program provides the same opportunity for development of both National Forest System and private lands at a reduced cost, for both parties, by sharing construction costs and reducing duplication of road systems.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Rights-of-way and cost share agreements can be cancelled as circumstances dictate and ownership changes, although the need for the roads will remain regardless of ownership. The roads constructed under this program then can be considered an irreversible commitment of vegetative resources and to a lesser degree, other resources.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

Adverse effects relating to roads is discussed under Road System (Section CC at the end of this Chapter).

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

Rights-of-way acquisition is normally undertaken in support of land management plans, and is not in conflict with them.

7. ENERGY REQUIREMENTS

Only minor energy use is involved in the access acquisition program. Substantial amounts of energy are expended in the construction of roads on the acquired rights-of-way.

N. PROPERTY BOUNDARY LOCATION AND MAINTENANCE

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

This section did not appear in the Draft EIS documents. There were no significant changes to the Boundary Location program between draft and final documents.

2. ENVIRONMENTAL CONSEQUENCES

About 65 miles of property boundary are located each year. Annual property boundary maintenance is currently at 0 miles. This will increase as funding becomes available and more of the boundary is completed.

The activity involves considerable manpower and time, but has few environmental effects. Some vegetation may be trimmed or completely removed to establish line of sight for the survey instrument, but this in inconsequential.

Boundary location establishes, with some finality, the property lines of Forest and other ownership. It enables owners to avoid activities on lands they do not own. Location of boundaries has no effect on PNV nor does it effect the economy of the area.

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Location of boundary has no effect on productivity.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

There is no commitment of resources associated strictly with boundary location.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

Some vegetation may be removed or pruned, but the effect should be short lived.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

None identified.

7. ENERGY REQUIREMENTS

Some energy is expended in travel when surveying, but this is small compared to total Forest use.

O. BUILDINGS AND OTHER FACILITIES

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

This section did not appear in the Draft EIS documents. There was no significant change to the management of buildings and other facilities between draft and final documents.

The Forest currently maintains an inventory of 146 buildings on 39 administrative sites. Needs have tentatively been identified for additional warehouse space on Swan Lake and Tally Lake Ranger Districts; shop, housing, and cold storage at Spotted Bear Ranger District; a replacement lookout, temporary crew quarters, and primary power upgrade at Hungry Horse Ranger District; and relocation of a workcenter on Glacier View Ranger District. A Forest-wide Master Facilities Needs Analysis will be required to confirm facilities needed to support implementation of the Preferred Alternative.

2. ENVIRONMENTAL CONSEQUENCES

Maintenance and reconstruction of administration structures may cause short-term, localized impacts to the physical and biological environment, but the effects are insignificant on a Forest-wide basis since the structures occupy a small percentage of the total Forest acres. The facility maintenance and reconstruction program is assumed to continue at the current level under all alternatives.

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Vegetation productivity will be lost during the life of the facilities.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The vegetative productivity loss represents an irretrievable commitment.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

Although efforts have been made to landscape building sites. The presence of the facilities do affect natural appearance. Effects of soil disturbance will remain long after the facilities are gone.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

None identified.

7. ENERGY REQUIREMENTS

The energy required to heat and light the administration sites is insignificant in relation to the total energy required to implement the alternatives and does not vary among the alternatives.

P. HUMAN AND COMMUNITY DEVELOPMENT

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

This section was not displayed in the Draft EIS documents.

2. ENVIRONMENTAL CONSEQUENCES

Forest activities have a significant effect on the local and regional communities. A variety of programs provides employment for individuals in Forest activities. Examples of these programs are the Youth Conservation Corps, Volunteer Program, and Senior Community Service Employment Program. Full-time Forest Service employees live and work in and near the Forest. In summer, this number is supplemented by seasonal employees, often from local communities. These programs have significant economic effects on the communities in and near the Forest, but of themselves, have little effect on the physical and biological environment.

Programs providing employment for other workers are listed in Table IV-11. These programs would not vary significantly by alternative.

TABLE IV-11 Programs Providing Employment - Flathead National Forest

Program	Number of People
Youth Conservation Corps	15
Volunteers	122
SCSEP (Senior Community Service) Employment Program	13
Host Programs 1/	61
TOTAL	211

1/ Host Programs include:

- *JTPA (Job Training Partnership Act) - Adult Work Experience
- *Summer Youth Employment Program
- *Handicapped Employment
- *REO (Rural Employment Opportunities Work Experience)
- *Tribal Work Experience Program
- *College Work Study
- *Older Workers Employment Program

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The goal of all the personnel on the Forest is to maintain the long-term productivity of the Forest. This desire is also what encourages people, young and old, to volunteer for particular jobs on the Forest. The on-the-job training gives volunteers valuable experience and acquaints them with the management philosophy of the Forest Service.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

None identified.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

None identified.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

None identified.

7. ENERGY REQUIREMENTS

Energy use by the Human and Community Development activity was not estimated because it is such a small portion of the energy required for the Forest.

Q. SPECIAL USES

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

This section was not displayed in the Draft EIS documents. There was no significant change in the issuance of special use permits or easements between draft and final documents.

2. ENVIRONMENTAL CONSEQUENCES

The Flathead National Forest administers approximately 400 special use permits and easements. The predominant use is for roads, along with recreation uses, utilities, and water uses which account for a large percent of the total number of permits.

The construction of the facilities authorized by these permits causes impacts ranging from severe on roads to very light in the case of underground utilities. Water uses are generally small domestic systems which cause small impact to either stream ecology or vegetation.

Although the effects of many permits are severe, the affected acreage is but a small percentage of the Forest total. Requests for permits involving new construction are subjected to an environmental assessment prior to issuance.

Special uses contribute to the present net value since fees are collected on many of the permits. In the overall program, collections exceed costs of administration and will tend to increase in the future as pending fee policy changes take effect.

The large number of permits on the Flathead National Forest is due to the fragmented landownership patterns on portions of the Forest. Over time, the number of permits will increase due to the increase in subdivision and development on intermingled lands.

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The vegetation on specific sites occupied by special uses is destroyed or altered. These effects will remain as long as the facilities remain.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Many of the permitted uses will remain for the foreseeable future. The vegetation loss and soil movement, caused by construction, is considered an irreversible loss of resource.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

Most new permits involving construction cause removal of vegetation, soil movement, and temporary erosion. Some may cause an adverse effect on visual quality and wildlife habitat.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

Conflicts are resolved prior to issuance of a special use permit.

7. ENERGY REQUIREMENTS

A minor portion of the Forest's energy use will be used for the granting and administering of permits and easements. The construction of facilities under permit often require high energy inputs for a short time.

A large percentage of the acreage involved in land use grants is used for the sole purpose of transporting energy in various forms.

R. WATERSHED MAINTENANCE AND IMPROVEMENT

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

The addition of Forest-wide Best Management Practices (see Chapter II of the Forest Plan under Forest-wide Standards for Water), in place of draft guidelines based on sediment production models, is the most significant change between the draft and final documents.

The Preferred Alternative clarifies water quality goals and monitoring objectives. An increase in acres of riparian management emphasis should improve watershed condition and water quality from the current situation.

2. ENVIRONMENTAL CONSEQUENCES

The goal of watershed management on the Flathead National Forest is to preserve existing basic soil fertility and high quality water. Management emphasis is placed on prevention of water and soil degredation rather than rehabilitation after degredation occurs. State law, binding on the U.S. Forest Service, does not allow unacceptable impact to water quality. For the Forest as a whole, water quality is at or above State water quality standards. Locally or temporarily, it may be of somewhat lower quality than it could or should be. At these sites, rehabilitation is planned if feasible.

Watershed improvement projects are investments made to maintain or improve water quality through rehabitation of natural and man-caused watershed problems. Projects generally consist of revegetating areas of soil exposed to erosion, stabilization of stream channels and banks, and stabilization of eroding or mass soil movement areas. Project priority and needs change annually as conditions change. Alternatives 4, 6, 9, 10, 16, and the PNV Benchmark would have only a maintenance level (about 75 acres/year) of watershed improvement due to low, nontimber, multiple-use management budgets. Alternatives 2, 5, 7, 12, 14, and 15 provide a moderate amount of watershed improvement investment (about 100 acres/year). Relatively high levels of watershed improvement investments are provided by Alternatives 1, 3, 8, 11, 13, and 17 (about 162 acres/year).

The main emphasis of watershed protection is in preventing sedimentation particularly from road building and timber harvesting, through the use of Flathead National Forest Best Management Practices. These are used in conjunction with the State of Montana water quality standards.

Projected increases in water quantity and sediment from interfluvial areas are evaluated on a project by project basis. The environmental analysis process is used to determine if stream channel stability and water quantity increases are within the acceptable levels prescribed by Forest standards. Mitigation measures are used to the extent possible.

For the most part, watershed projects are designed to maintain or improve water quality and channel stability. They are similar or identified to projects designed to improve fish habitat. While the actual work is completed on a small acreage, the benefits may enhance not only the area of the project but also a large downstream segment of the Forest.

Alternative 6, and to a lesser extent, Alternatives 2 and 7 (Current Direction), would have the greatest potential for adverse impacts. Effects of timber management on water quality can be partially mitigated through the distribution and scheduling of timber harvest.

In the early 1980's, several proposals to develop micro and small hydro power generation facilities on the Flathead National Forest were made. This type of project may negatively impact streams. The impacts of these facilities were evaluated on a project by project basis, with recognition of the management objectives and watershed quidelines applicable to a given stream. As of June 1985, all applications for study of these projects have been abandoned or cancelled.

Visual Quality - Under all alternatives, the visual quality of a specific area may be degraded by timber sale design requirements necessary to protect water quality. This is because the layout of harvest units may not meet visual quality objectives if water quality concerns are constraining the options for harvest unit size, form, and distribution. The potential conflict, if such exists, between visual quality and water quality would be highest in Alternatives 3, 8, 11-15, and in the Preferred Alternative because these alternatives apply more visual quality constraints to timber harvest than do the other alternatives. In general, visual quality and water quality constraints can be blended so the requirements of both resources are satisfied.

Fish - The level of pollutants in Forest streams is generally low. Pure waters with low nutrient levels result in low fisheries productivity (State of Montana, Department of Fish, Wildlife, and Parks, 1979-1982). Slight increases in sediment and nutrient loads could theoretically benefit the fisheries; however, sediment increases would adversely impact spawning gravels. The low fisheries productivity of Forest waters makes any adverse impacts on the fisheries significant as fish populations will not rebound rapidly (Flathead Drainage 208 Project, 1977). Fishery habitat projects have helped improve stream stability and water quality.

Mineral Activities - Special stipulations that restrict surface occupancy in riparian areas would be used under all alternatives to protect water quality. Additional surface occupancy restrictions would be imposed for surface occupancy on 100-year flood plains and in wetlands (Oil and Gas Leasing, Environmental Assessment, Flathead National Forest, 1980).

Timber - Maintenance of acceptable levels of water quality requires that timber harvest be well distributed throughout the suitable land base so that the amount of harvest scheduled within a drainage does not cause unacceptable increases in water yield or sediment (Harr, 1980). These watershed constraints may increase the costs of timber management, as discussed below.

PNV - Maintenance of acceptable levels of water quality and quantity reduce PNV due to increased costs associated with timber harvest methods and scheduling and with road construction designed to minimize adverse impacts on water quality. Applying constraints designed to minimize impacts on water quality may force timber harvest into areas where management is not as cost efficient as it is in other areas. As demonstrated by the FORPLAN computer model, a more positive cost/benefit ratio exists in certain areas of the Forest; therefore, forcing harvest to less economically efficient areas reduces the PNV.

Social and Economic - People perceive water quality as an indicator of the quality of the natural environment. Degradation of water quality in an area which has historically had pure water is generally considered undesirable (Giannettino, 1981).

Recreational use of Forest streams and lakes is high in proportion to total recreational use of the Forest (RIM data, Flathead National Forest). Low quality water would result in low quality recreational experiences; adversely impacting the recreational fisheries in Forest streams and the Flathead River System. These fisheries are of particular importance because not only do they provide recreation opportunities, but tourists and summer residents, drawn in part by the fishing opportunities, contribute to the local economy.

Alternatives 2, 6, and Current Direction would have the greatest potential for degrading the existing high quality water, while Alternatives 1, 10, 16, and 17 would provide the best opportunities to maintain high quality water and, therefore, high quality recreation opportunities.

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Soil and water are the primary factors of long-term productivity of National Forest System lands. Relationships between other resource management objectives and the soil and water resources represent the relationship between short-term uses and long-term productivity.

Hydrologic recovery of watersheds, that is, the healing time necessary for impacted watersheds to again produce high quality water, may vary from a few to 40 years or more.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Commitment exists only if the projects are not completed. The objective of watershed projects is to return areas to new pristine water quality and to maximum productivity of fish habitat.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

Stream channel stabilization and debris removal projects may disturb the channel banks and bottom; and cause temporary degrading of water quality.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

No conflicts exist with the objectives of other land management plans, or policies and controls, because the goal of the Forest as well as other Federal and State agencies is to maintain and improve water quality. Continued coordination and cooperation are part of this.

7. ENERGY REQUIREMENTS

Energy will be required for watershed condition maintenance and rehabilitation projects, and to survey and monitor watershed conditions on the Forest. This will, however, be a small portion of the total Forest energy consumption.

PROTECTION - FIRE SUPPRESSION

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

There were no significant changes to this section between the draft and final documents.

2. ENVIRONMENTAL CONSEQUENCES

The objective of fire protection is to provide efficient fire prevention, detection, presuppression, and suppression programs for the Flathead National Forest. The goal is to implement a fire protection program which costs the taxpayers the least, considering fire organization, suppression costs and resource values lost to fires.

The Flathead National Forest averaged 53.8 fires from 1974-1983. Of these 59.3 percent have been lightning caused and 40.7 percent caused by human activities.

For the period 1974-1983, an average of 151.6 acres burned per year. Lightning fires accounted for 44.1 percent of the acres per year and human caused fires were 55.9 percent.

The greatest fire occurrence, in the 1974-1983 season was 143 fires in 1981. The smallest was 22 in 1983. The 1981 season showed the sixth most fires on record for the Flathead National Forest, third most fires on record since 1940.

During the last two decades, serious fire years have occurred in 1963, 1967, 1973, and 1979. The severity of any given fire year is not sufficiently predictable to be of any help in obtaining fire protection resources.

Fire is an agent of change in ecosystems. Depending on the ecosystem, the fire size and the fire intensity, that change may be minor or major. Depending on the management objectives for the fires site, the effects of a fire can range from very beneficial to very detrimental. For example, high intensity fires in areas managed for timber production kill trees and reduce the value of the site. Fires in wilderness that do not threaten life and property or areas outside the wilderness are an integral part of the wilderness. High intensity fires in old-growth timber stands in caribou habitat eliminate caribou feed for at least a century and a half. The same fire in grizzly bear habitat improves food for bears but may adversely affect needed cover. Large, high intensity fires on some soil types and slopes results in soil movement and stream siltation. Soil structure and productivity can be adversely altered, in some cases, by very high intensity fires. In some cases, fire leads to insect and disease outbreaks; in others it helps control their occurrences.

Fire suppression activities impact fire sites. Firelines are often long-term marks on the land. If they are not properly located or treated, they can result in accelerated soil erosion. Trees are often cut during fire suppression. In some cases, roads built into remote fires result in "permanent" trails or roads. Fire retardant dropped from air tankers can pollute small lakes or streams. Red dyes used in retardants, except fugitive dye retardants, can be seen for a year or two after the fire. Camps developed for large fires can have long-term impacts on the sites.

The Forest current fire protection program cost is $795,000 per year. Alternatives that would significantly increase timber sale volume will require greater fire protection levels to assure that the trees reach rotation age. This will cost more than the current fire program. Conversely, alternatives which produce less timber than the program current would require a slightly smaller fire protection expenditure.

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Fire suppression activities will respond to defined resource directions and requirements. In the short-term, activities will minimize damages to resources, such as timber, by providing protection. Reduction of fire treated acres may, in the long-term, affect the vegetative composition, distribution and thereby affect the fauna, aesthetics, hydrology, and susceptibility to Forest pests and fire.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Fire protection programs can be altered or terminated at any time, thus there are no irretrievable consequences. Vegetation management procedures can be initiated to prevent or reverse any undesirable effects of fire suppression activities.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

Adverse effects which cannot be avoided should be very limited such as soil loss during suppression. Forest-wide and management area standards will identify activities which are not acceptable.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

None identified.

7. ENERGY REQUIREMENTS

Energy requirements depend on the number of fires that occur and the tactics used. Aircraft and equipment use large quantities of fuels.

T. PRESCRIBED FIRE

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

There was no significant change to prescribed fire management between draft and final documents.

2. ENVIRONMENTAL CONSEQUENCES

Prescribed fires are fires used in accordance to conditions contained in a prescribed fire plan to achieve management objectives. The fires can result from lightning ignitions or initiated by land managers.

Prescribed fires can be prescribed for any functional resource benefit. The direction to use prescribed fire should be contained in the appropriate resource standards and guidelines. Fire management will provide technical support, project execution and financing as appropriate.

The time, intensity, and size of prescribed fires will vary greatly, depending on the desired results. Currently prescribed fire is being used for fuel reduction, reforestation site preparation and wildlife habitat improvement. Prescribed fire in wilderness allows fire to play as near a natural role as possible in their respective wilderness ecosystems. Protection of life property and resources on adjacent nonwilderness areas are addressed in such plans. Air quality considerations are a part of the fire prescriptions.

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Prescribed fire is planned and used to bring about desired effects in the short- and long-term. Consequently, the land productivity will be maintained or enhanced in both short and long-term. As an example, plant or animal diversity is maintained. Prescribed fire may burn out of prescription. In those cases, short-term effects may be undesirable. Fire suppressions actions will be taken to minimize those short- and long-term effects.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The short-term effects of any fire are irreversible--resources are consumed. Normal vegetative succession following fire will occur, thus there are no irretrievable commitments of resources in the long term.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

Smoke is an inescapable consequence of fire. At times, atmospheric conditions will result in smoke intrusions into smoke sensitive areas. Individuals' value judgments vary greatly, but to some the short-term aesthetics will be damaged. Vegetation will be changed. Habitat for some species of fauna will be enhanced at the expense of other species. Through time this will change.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

The possibility exists that smoke emissions may, at times, exceed Clean Air Act Standards. Fire ignitions will be timed with favorable weather conditions to avoid conflict. Also, coordination may be required with other land management agencies to avoid cumulative impact on air quality.

7. ENERGY REQUIREMENTS

The energy required for prescribed fires will be less than that required to suppress fires or bring about the desired changes in ecosystems by other means (sawing, spraying, dozer scarification, chipping, burying, etc.) Projected energy requirements for prescribed fire based on fuel treatment acres is displayed in Table IV-12 for Decades 1-5.

TABLE IV-12 Energy Consumption Related to Prescribed Fire (Billion BTUs) - Flathead National Forest

	Decade				
Alternative	1	2	3	4	5
1	98	97	93	134	132
2	134	129	131	272	163
3	125	102	101	226	177
4	49	69	155	204	187
5	97	101	95	139	126
6	138	127	109	170	136
7 CD	144	137	213	222	110
8	125	102	101	226	177
9	120	155	95	136	158
10	100	92	83	120	140
11	149	120	110	248	200
12	149	127	101	240	213
13	147	128	108	240	213
14	147	153	104	236	210
15	81	87	77	129	125
16	81	87	77	129	125
17 PA	137	118	87	218	110

U. RANGE MANAGEMENT

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

In response to the establishment of grizzly bear Situation 1 and 2 areas on the Flathead National Forest, eight range allotments outside of wilderness will receive biological evaluation which will possibly affect the management of these allotments.

The Forest has implemented a noxious weed control and monitoring program. Emphasis will be on controlling the spread of noxious weeds in the Preferred Alternative.

2. ENVIRONMENTAL CONSEQUENCES

Alternatives 3, 5, 7, 8, 10-15, and 17 would continue permitted livestock grazing on the Forest near current levels (about 6,200 AUM's/year). Alternatives 1 and 16 would reduce permitted grazing by about 25 percent in order to increase nonpriced outputs, Alternative 4 would reduce permitted livestock about 10 percent to eliminate the most costly allotments. Alternative 6 would increase grazing about 15 percent over current levels as a result of emphasis on priced outputs.

The nonwilderness transitory range management program, providing grazing opportunities for domestic livestock (primarily cattle), has the following impacts on other resources.

Wildlife - Grazing on big-game winter ranges creates a situation in which spring and summer use of grasses can damage their productivity. Cattle use during the summer months following winter and spring grazing by big-game animals may result in reduced vigor of forbs and grasses. Plant vigor must be sustained to ensure continued spring grass production on the winter range for use by deer and elk at a critical time. Under all alternatives, this potentially adverse effect on winter range is reduced by restricting cattle use to 50 percent of normal grazing levels on winter ranges (Williamson, 1981-82). Noxious weeds should not reduce capacities.

Fish and Water - Riparian areas are usually grazed first, before livestock will move to other areas, because these areas provide shade and escape from flies, in addition to water and forage. Water quality and fish habitat may be affected by excessive cattle grazing that causes breakdown of streambanks or increases sediment through reducing vegetative ground cover, or by increasing nutrient levels of the water (Peek and Dalke, 1982; Platts, 1978). Direct damage to the fishery can occur when livestock walk in the streams, causing stream bottom disturbance, increased turbidity and destruction of trout redds, eggs, and fry. Application of Best Management Practices will help control the spread of noxious weeds.

Most spawning gravels are found in low gradient (less than 3 percent) streams. Increased grazing use above current levels, such as projected in Alternative 6, would have a significant adverse effect on all riparian areas, impacting fisheries and water quality (Gifford, 1980; Fowler, 1980). All other alternatives including the Preferred Alternative will have adequate mitigation to maintain or improve water quality and fish habitat.

Soils - Generally, with proper management of cattle grazing, soil erosion will not be a significant problem under any alternative. Erosion of soil will occur when cattle graze on road cuts and fills. Fertilizer is needed to sustain vegetation on the exposed cuts and fills. Fertilized and introduced grasses will attract livestock. Soil compaction, however, is a problem with the moist soils on the Tally Lake Ranger District and part of the Swan Lake Ranger District. Compaction resulting from cattle use is usually surface compaction which favors grass production and grass competition with trees.

In severe cases compaction by cattle will retard tree growth and complicate regeneration of new stands (Lull, 1959). Existing grazing allotments are mostly on compactible soils. It is difficult to control cattle on allotments with isolated parcels of compactible soils. Where substantial areas of an allotment, however, are involved, control could be initiated under all alternatives by fencing, reducing livestock numbers, or closing the allotment. Restricting grazing to the dry periods of the year would lessen the degree of compaction.

Because they substantially decrease the number of permitted AUM's, Alternatives 1 and 16 would have the fewest soil compaction problems. On the other hand, Alternatives 2 and 6 would at least maintain the existing level of impacts. All other alternatives have adequate rehabilitation to correct existing problem areas and adequate mitigation measures to prevent soil damage.

Dispersed Recreation - Cattle grazing may annoy recreationists because of smells, flies, visibility, noise, and manure on the trails. These annoyances can be avoided to some extent because the suitable range areas are not the areas designated as dispersed recreation. The majority of roadless lands designated as dispersed recreation are too steep for domestic livestock to use. Some recreation, however, is expected to occur in areas not specifically designated for dispersed recreation. Areas where the annoyance factors to recreation visitors would be greatest are the riparian areas. The riparian areas (the streams and lakes) are where both cattle and people like to congregate. Under Alternative 6, the additional grazing in riparian areas or presently unused areas could result in conflicts with recreation visitors. Little or no conflict is likely in other alternatives. A system of checks to prevent spread of noxious weeds in wilderness areas will be implemented in Alternative 17.

Social and Economic - The Flathead National Forest transitory range grazing program is small if compared to other Forests in the Northern Region. The significance of the program is more social and cultural than economic (Giannettino, 1981, Range Market Profile, Draft). The National Forest transitory range is part of the land base that assures a local supply of meat products, and the Forest's transitory range can be and has been used when drought affects eastern Montana. The majority of any economic significance is to the permittees, not to the local or State economy. Alternative 1, which would signficantly decrease transitory range livestock permitted AUM's from the existing levels, would adversely affect Forest permittees.

Current range administration is done in cooperation with Plum Creek Timber Company, Inc. and the State of Montana. Sizeable increases in permitted AUM's over existing levels, as would occur under Alternative 6, would create problems in adjusting management and administration according to the Forest's range specialist. Additional trespass of permitted cattle on adjacent private lands could be expected.

Timber - Following timber harvest, trees are restocked through planting and/or natural regeneration. Cattle grazing can be a problem until trees become well established and reach a height where trampling will not occur (FSH 2201.21, R-1--Range Analysis; McLean and Clark, 1980; Cleery, 1978). Of all the harvest methods, clearcuts produce the most forage and are most susceptible to cattle damage, because forage production increases rapidly during the period when the reestablishment of trees is in progress. Shelterwood harvest produces less forage during the first harvest stage (Reid, 1964). Natural regeneration begins after this first harvest entry and progresses until the final entry. Forage production peaks after the final entry. At this time, the new stand of trees is secure from cattle damage. Thus, with shelterwood harvests, cattle are less of an impact on regeneration. Selection timber harvest generally does not produce additional forage.

Cattle grazing on clearcut areas where regeneration is being established will be permitted if the silvicultural prescription and allotment management plan are designed to meet the regeneration goals for the area. Otherwise, cattle will be excluded from problem regeneration areas until trees are established (FSM 2472.7). This constraint primarily affects the Swan Lake and Tally Lake Ranger Districts where most grazing occurs.

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The grazing of livestock on the Forest will have little effect on long-term productivity. A few areas, near watering places and salting areas, will continue to be over used and will change the vegetation production of these small areas.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

There is a long tradition of grazing on the Forest. As long as this tradition exists, there is little likelihood that all livestock will be removed from the Forest. The forage grazed by these livestock is a commitment of that resource.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

Some streambank trampling cannot be avoided without very high investment in fences. Coliform counts are increased where manure is dropped into streams. Facilities and fences have an effect on the visual resource. Cattle may have either a positive or negative visual effect depending on the viewer. Some adverse effects will occur on fish habitat, recreation use, and water quality.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

Any conflicts that are identified with T & E (threatened and endangered) species will be resolved in favor of the T & E species.

7. ENERGY REQUIREMENTS

Energy required by the Forest and permittees for livestock management is minimal. Table IV-13 displays the projected energy requirements for range management during Decades 1-5.

TABLE IV-13 Energy Consumption Related to Range Management (Billion BTU's) - Flathead National Forest

	Decade				
Alternative	1	2	3	4	5
1	.0009	.0009	.0009	.0009	.0009
2	.0012	.0010	.0012	.0012	.0012
3	.0011	.0010	.0011	.0011	.0011
4	.0012	.0008	.0011	.0012	.0012
5	.0011	.0008	.0011	.0011	.0011
6	.0014	.0010	.0014	.0016	.0024
7 CD	.0011	.0012	.0012	.0012	.0012
8	.0022	.0021	.0022	.0022	.0022
9	.0012	.0002	.0012	.0012	.0012
10	.0001	.0001	.0001	.0001	.0001
11	.0012	.0002	.0012	.0012	.0012
12	.0012	.0002	.0012	.0012	.0012
13	.0012	.0002	.0012	.0012	.0012
14	.0012	.0002	.0012	.0012	.0012
15	.0012	.0002	.0012	.0012	.0012
16	.0001	.0001	.0001	.0001	.0001
17 PA	.0011	.0010	.0011	.0011	.0011

V. MINERALS

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

The existing oil and gas leases on the Forest have been suspended by the Bureau of Land management due to a Federal District Court decision. Suspension means that activities permitted under the terms of the lease must cease. None of the lease tenure, however, is lost. The lease will continue to run for the full amount of time remaining after the suspension is lifted.

2. ENVIRONMENTAL CONSEQUENCES

a. Oil and Gas

Exploration and development are carried out by private companies under a Federal leasing program. Under all alternatives, present leases would be honored to the extent of the lease agreement. The activities associated with each phase of exploration and development are as follows:

- Preliminary exploration is conducted through geologic mapping and seismic surveys, which use surface or subsurface explosives and/or vibroseis methods. Trucks, off-road vehicles, foot, or helicopter transportation methods are used.
- Exploratory drilling requires drilling of core samples and/or exploratory wells. Road access and construction of a drill pad would be required.
- Field development entails drilling wells, roading, and construction of drill pads, sweetening plants, storage tanks, pipelines and other facilities. Field development can occur if the exploratory well results in an oil and gas discovery.

Oil and gas activity is highly speculative and seldom proceeds beyond preliminary exploration or exploratory drilling for any given set of leases. The probability of occurrence for a particular activity sharply diminishes with each successive phase.

Until recently, most oil and gas activity was projected to take place on the eastern side of the Forest - the area closest to the Rocky Mountain Front - because that area was thought to have the greatest potential for discovery of oil and gas on the Forest. Seismic surveys conducted during the last 2 years have provided indications of good oil and gas potential on the rest of the Forest.

Standard oil and gas stipulations that reduce impacts to other resources are as follows*:

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* Taken from the standard oil and gas lease contract for National Forest System lands. See Appendix O of the Forest Plan.

-- Esthetics
-- Erosion Control
-- Controlled or Limited Surface Use
-- Cultural and Paleontological Resources
-- Endangered or Threatened Species

Any or all of these stipulations may apply to the lease and may be made less restrictive depending upon the actual on-the-ground conditions.

The licensee/permittee/lessee must, however, comply with all the rules and regulations of the Secretary of Agriculture set forth at Title 36, Chapter II, of the Code of Federal Regulations governing the use and management of the NFS (National Forest System) when not inconsistent with the rights granted by the Secretary of the Interior in the license/prospecting permit/lease. The Secretary of Agriculture's rules and regulations must be complied with for (1) all use and occupancy of the NFS prior to approval of a permit/operation plan by the Secretary of the Interior, (2) uses of all existing improvements, such as Forest development roads, within and outside the area licensed, permitted, or leased by the Secretary of the Interior, and (3) use and occupany of the NFS not authorized by a permit/operating plan approved by the Secretary of the Interior.

The oil and gas exploration and development has the following impacts on other resources (see Forest Plan, Appendix O for complete text of oil and gas stipulations).

Roadless Resource - Approximately 87 percent of the nonwilderness roadless areas on the Flathead National Forest are presently under oil and gas lease agreements, and the rest are under application. Any on-the-ground disturbance or impact to surface resources, due to a proposed project, would be evaluated prior to Agency approval of the project.

Under all alternatives, oil and gas activities would adversely affect the long-term quality of the roadless resource if a discovery is made and a development phase occurs. If only exploratory drilling occurs, most of the impact of drilling activities would be short term--1 to 2 years--if site rehabilitation is done.

The opportunity for wilderness management would be foregone in that part of the roadless area affected by full field development. Some specific sites would not be affected at all because the area has been leased with no-surface-occupancy, and it has been determined that no mineral development will be allowed inside the area. Jewel Basin Hiking Area and Swan River Island are included in this category.

Special stipulations will protect most roadless areas through existing roadless area direction and the allowance of only temporary construction in the area.

Recreation - The impact of mineral development would be particularly adverse in roadless settings where the recreationist is afforded the opportunity to escape the sights and sound of man.

Impacts would be minimized but not avoided through the use of special stipulations that specified the acceptable timing of activities, reclamation requirements, road and site locations and so on.

Impacts on roaded dispersed recreation settings would generally not be significant unless full field development occurred and dominated the landscape.

Campgrounds, picnic areas, resorts, summer homes, and the Big Mountain Winter Sports Area, would be protected under all alternatives through withdrawal from oil and gas activity or through special stipulations that prohibit surface occupancy. Restrictions on occupancy in the surrounding area would be employed to reduce impacts on the recreational setting.

Some business operations on the Forest or on adjacent or intermingled lands, such as outfitters and guides, could be adversely affected by the degradation of the primitive and semiprimitive recreation settings.

User conflicts on roads may take place between the general public, log hauling traffic, and oil and gas exploration traffic. The noise associated with helicopters, surface explosive charges, drilling equipment, and generators used in the exploration and development phases will adversely affect the quality of the recreation experience.

Cultural Resources - Activities associated with the development of oil and gas deposits (such as well pads, access roads, and pipelines) have the potential to adversely affect significant cultural resources. Ground disturbance can damage, destroy, or disturb the location of cultural remains (McLean, 1981).

All cultural resources are protected under Section 106 of the Historic Preservation Act.

Visual Quality - Under all alternatives drill sites and roads modify the visual quality of the landscape, particularly during the construction phase. The visual quality of an area could be degraded below the desired condition. Impacts in areas not previously roaded may be especially noticeable.

In areas with visual quality objectives designed to retain or partially retain the natural-appearing landscape, special stipulations would be used that require the private companies to minimize their visual impacts. Facilities can be painted to blend in with the environment. Roads can be located so as to minimize the visual impacts. Site rehabilitation would be required following completion of the development phase, however, some surface alteration due to roads and well pads may remain.

Fish - Direct mortality of fish is not expected to occur due to oil and gas activities. Accidental discharge, however, of toxic substances into fish habitat, such as spilled oil or waste water from mud and evaporation pits, would have significant adverse impacts. The steep gradient of many Forest streams in combination with their remoteness could mean wide ranging impacts from a single accident. Accidents will be prevented to the greatest extent possible through careful monitoring and development requirements designed to protect the surface resources.

In general, special stipulations restricting oil and gas activities in riparian areas would minimize adverse impacts on the Forest's fisheries. The most serious probable effect would be associated with the sediment generated by road construction and other surface disturbing activities. Mitigating measures associated with road construction, including proper location, design, and installation of drainage features, should help alleviate the sedimentation problem. In addition, timing of construction will be restricted to prevent disturbance of fish.

Wildlife - Human activity, blasting, road and drill site construction, and helicopter use affect the pattern of use of habitat by grizzly bears (Schallenberger and Jonkel, 1979). Grizzly bears and other wildlife species requiring security from human disturbance would be most adversely affected. Increased human activity has the most potentially adverse effect (including illegal poaching, harrassment, and displacement of animals from historically used seasonal ranges).

A minor amount of vegetation loss can occur during the exploratory and development phases. In some winter ranges, these impacts could affect big-game animals.

Other wildlife habitat loss or degradation would be negligible during preliminary exploration. Exploratory drilling and development, however, could alter minor amounts of wildlife habitat by road, drill pad, or other facility construction.

The timing and location of surface occupancy for preliminary exploration and drilling activities in relation to key habitat use patterns would determine the significance of disturbances or displacement.

Special stipulations that restrict access and timing would mitigate potential conflicts. Alternatives 4 and 6, with the fewest special stipulations, would have a higher level of adverse impacts than Alternatives 1, 5, 10, and 16 , with numerous special stipulations designed to protect wildlife values. Direct mortality from exploration activities is unlikely.

Vegetation - Under all alternatives, construction of drill pads and roads would result in destruction of existing vegetation. The total amount of vegetation disturbed by oil and gas activities would be relatively small and should have little effect on native plant communities. Reclamation of the site would occur under all alternatives. Disturbed areas would be seeded with native grass shrubs. Reforestation of reclaimed roads and drill pads would be a mandatory permit requirement, assured by a bond provided by the private company prior to any authorization of surface disturbing activities.

Soil and Water - Construction of roads, drill pads, and other facilities would result in soil disturbance and would require incorporation of measures that would minimize erosion and increased sediment. Road maintenance would disturb the road surface and result in soil loss with some soil eventually entering the streams as sediment. Development activities would be carefully monitored to minimize the adverse effects on soil and water, however, the potential for accidents (for example, an oil spill or holding tank leak) would exist under all alternatives.

All alternatives have guidelines that protect riparian areas, flood plains, and wetlands, which are especially sensitive to disturbance.

Some landtypes on the Forest may be sensitive to oil and gas activities from the standpoint of mass failure hazards. (Oil and Gas Leasing, Environmental Assessment, Flathead National Forest, 1980.) The severity of the problem would depend on the type of specific project activity proposed. Special stipulations have been developed and incorporated in leases to prevent or restrict surface occupancy in areas with land stability problems.

Social and Economic - The activities associated with oil and gas exploration and development are not well understood by area residents nor is the Forest Service's role in administration and management of oil and gas activities on National Forest System lands (Giannettino, 1981).

Generally, oil and gas associated activities can alter people's lifestyles; however, preliminary exploration and exploratory drilling would probably not significantly alter local lifestyles (Wenner, 1982). Field development could, but the potential for those impacts occurring would be difficult to predict at this time. The possibilities of exploratory drilling and development evoke differing value responses in individuals and groups and could lead to polarized interest groups and conflicts within communities. Under all alternatives, this effect could occur. Over the last 4 years, increasing levels of seismic survey activities have generally been accepted by the local communities. Conflicts center around "where" on National Forest System lands development should be allowed rather than "if" development should occur.

Oil and gas activities can provide positive impacts to local economies in both exploratory and development phases so long as impacts do not occur all at the same time.

b. Locatable Hard Rock Minerals

Exploration and development are carried out by private companies. Historical activity on the Forest indicates that impacts of mineral exploration and development is very remote (Illi, 1981-82). Visual quality could be adversely affected by mining operations and road construction. A large operation could affect soil and water quality requiring stabilization and restoration measures.

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Exploration and development of mineral or oil and gas resources are likely to have short-term effects on productivity of site-specific areas. Development on a large scale would have a longer term effect on original productivity but the productivity of the mineral resource may be more beneficial than that which it replaces. Some disturbed sites are unlikely to be as productive as before disturbance.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Leasing for oil and gas can be an irreversible commitment of the resource if the lease is exercised and oil and gas discovered. If development of the mineral or oil and gas occurs, the effects become irreversible with respect to the mineral resource unless economics dictate otherwise. Disturbed sites may be rehabilitated and although the vegetation lost while the development was in place is not retrievable, the site preparation could actually improve future productivity.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

There are no adverse effects associated with leasing; however, if exploration or development occurs, soil will be disturbed, erosion will occur and water quality may be lowered. Some visual resource may be lost. Mitigating measures will be applied under Federal regulations to reduce the intensity of the adverse effects.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

None identified.

7. ENERGY REQUIREMENTS

Energy requirements will be small unless large mineral or oil and gas discoveries are made. Some energy is used in the Forest minerals programs but is a small portion of the Forest total.

W. PROTECTION - INSECT AND DISEASE

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

The rate of tree mortality from the mountain pine beetle epidemic has exceeded past projections. Some of the highest mortality rates on record have been observed on Tally Lake Ranger District. The Forest currently has 225,509 acres actively infected with mountain pine beetle in lodgepole pine. Stands of dead and dying lodgepole pine have not been harvested as projected in the Draft EIS due to poor market conditions. There is, therefore, increased fire hazard within these stands.

2. ENVIRONMENTAL CONSEQUENCES

The following tabulation displays the acres of insect and disease conditions on the Flathead National Forest.

Insect & Disease	Acres
Douglas Fir Beetle	1,578
Engelmann Spruce Beetle	3,317
Mountain Pine Beetle	
White Pine	1,918
Ponderosa Pine	9,066
Lodgepole Pine	225,509
Whitebark Pine	2,325
Subtotal	238,818
TOTAL	243,713

The most significant environmental consequences involve measures to deal with the current mountain pine beetle epidemic which affects 238,818 acres of the Forest. Water yields and sediment risk will be increased as a result of reduced interception and transpiration of water due to the extent of the dead stands. Salvage harvesting will somewhat increase that risk, however, close monitoring will be done, and operations modified if unacceptable impacts begin to develop. Due the natural occurance of infected lodgepole stands, it will be necessary to exceed the 40-acre size of opening standard in several sales. Tally Lake and Swan Lake Ranger Districts are most affected, and standard public notice procedures will be used to disclose locations when necessary to exceed the size of opening standard. The Preferred Alternative continues to emphasize an integrated pest management strategy and an aggressive lodgepole salvage program, at some cost to PNV. More acres of harvest and higher slash and reforestation costs are needed to produce equivalent volume of other species.

The relative long-term effectiveness of each alternative in addressing insect and disease problems is estimated by the Insect and Disease Hazard and Risk Index,* displayed below. This index estimates the acres with the greatest opportunity to address insect and disease problems at minimum cost. The Preferred Alternative ranks high providing acres where insect and disease problems could be addressed. This is primarily due to the timber management regimes of this alternative. Alternative 9 provides the fewest acres with opportunities to address insect and disease problems.

The following tabulation compares the Insect and Disease Hazard and Risk indices for all alternatives. The index estimates the number of acres (in thousands) that will be accessible for effective long-term pest management. The methodology for computing the index is documented in the planning records.

Alternative	I&D Index	Alternative	I&D Index
1	645	9	512
2	689	10	558
3	684	11	720
4	678	12	701
5	609	13	650
6	709	14	621
7 CD	730	15	621
8	724	16	550
		17 PA	693

Alternatives which add to the wilderness system generally have fewer acres than a comparable alternative with no wilderness classification due to reduced opportunities for access and vegetation manipulation.

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Long-term productivity and net public benefits are maximized by salvaging beetle killed timber through the commercial timber sale program primarily due to nonpriced benefits associated with reduced fire hazard, reduced risk to adjacent landowners.

The implementation of appropriate silvicultural methods to manage insect and disease problems increases the long-term productivity of the Forest for recoverable resources as opposed to no treatments.

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* See "Procedures for Estimating the Effects of Alternatives for Insect and Disease Hazard and Risk Management" in the Forest planning records.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Silvicultural treatments such as harvesting stands implies that the areas will normally be managed more intensively for timber than other resources. Additional treatments, including harvesting will be scheduled for the future.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

Water yield increase due to extensive tree mortality cannot be avoided.

Even with the most intensive insect and disease programs, some timber losses and associated resource impacts will continue to occur. Insect and diseases will continue to play a significant role in the Forest ecosystem.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

None identified.

7. ENERGY REQUIREMENTS

The pest management activities require no significant energy use above that used in the normal timber sale program.

X. TIMBER HARVEST

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

This section now reflects changes due to a reduction in suitable acres and the scheduling changes due to lodgepole pine salvage and wildlife considerations (i.e., Trail Creek Grizzly Bear Management Area and the Forest-wide Grizzly Bear Guidelines). Water Quality Guidelines and their application in systems using water yield and sediment prediction models used in the DEIS have been replaced with Best Management Practices Guidelines and comparisons based on projected activities scheduled for each alternative.

2. ENVIRONMENTAL CONSEQUENCES

The timber harvest schedules displayed in Table IV-14 vary according to the total suitable acres where timber management can be practiced, the funding levels, timber management intensities, and the resource objectives associated with each alternative. The schedule for an amount of cultural treatments, such as planting and thinning, and the management activities which support the timber harvest vary for each alternative. Timber management activities affect management opportunities and use of most other resources.

TABLE IV-14 Decade 1 Timber Program and Effects Summary With Projections for Subsequent Decades - Flathead National Forest

Output/Activity	Alternative 1	2	3	4	5	6	7 CD	8	9	10
	Million Board Feet Per Year									
TIMBER - POTENTIAL BASE HARVEST Decade 1 ------------------>	82	116	101	51	82	145	132	100	103	80
2	98	119	105	86	99	134	122	103	97	95
3	115	145	129	151	115	149	167	127	106	112
4	130	161	141	175	129	170	143	137	125	125
5	151	177	160	176	151	175	161	166	146	144
10	142	168	156	173	142	164	154	164	131	143
15	132	157	148	154	132	161	151	152	117	143
	Million Cubic Feet Per Year									
Decade 1 ------------------>	20.3	28.8	25.1	12.2	20.5	34.7	30.8	25.0	25.2	19.7
2	23.4	28.8	25.1	20.1	23.5	33.7	30.8	25.0	25.2	22.6
3	26.9	34.6	30.1	36.4	27.1	34.8	38.5	29.5	25.2	26.1
4	30.9	41.5	36.1	42.2	31.1	41.8	38.5	35.4	30.3	30.1
5	35.6	42.1	38.5	42.2	35.8	41.9	38.5	40.6	36.4	34.4
10	35.6	42.1	38.5	42.2	35.8	41.9	38.5	40.6	32.6	36.6
15	35.6	42.1	38.5	42.2	35.8	41.9	38.5	40.6	29.3	36.6
	Million Board Feet 1/									
LONG-TERM SUSTAINED YIELD	154	180	166	175	152	186	165	165	129	142
	Million Cubic Feet									
	38.4	45.1	41.4	43.7	38.1	46.4	41.2	41.2	32.3	35.5
	Thousand Acres Per Year									
TOTAL POTENTIAL TIMBER HARVEST AREA Decade 1 ------------------>	6.5	11.2	9.3	3.2	6.5	8.3	8.5	9.8	8.0	6.3
2	6.5	10.9	7.7	4.7	6.7	11.6	12.1	8.5	10.3	6.1
3	6.2	11.0	7.6	10.3	6.4	7.6	9.4	7.5	6.3	5.5
4	8.9	20.4	16.0	13.8	9.3	12.7	19.9	16.3	9.1	8.0
5	15.3	13.2	12.8	13.4	9.7	11.7	11.1	14.4	10.5	9.4
10	12.4	17.6	13.5	14.3	7.1	16.9	14.4	17.4	11.8	13.9
15	23.7	32.0	21.3	32.7	27.0	26.1	21.5	21.2	13.8	17.3
POTENTIAL INTERMEDIATE HARVEST Decade 1 ------------------>	1.4	2.0	2.2	0	1.5	0.3	0.1	2.7	2.4	1.6
2	1.4	2.4	1.1	0.1	1.6	4.3	4.2	1.7	5.2	1.1
3	.8	2.3	0.6	3.4	1.1	0.7	T 2/	0.5	1.1	0.2
4	2.6	11.0	8.8	5.6	2.8	3.7	13.0	9.2	2.2	1.5
5	2.4	3.8	5.8	5.9	3.7	4.3	4.4	7.2	3.8	3.5
10	5.9	7.8	5.6	6.9	6.8	9.4	6.1	6.5	5.2	7.6
15	20.0	26.7	14.7	29.9	24.3	20.8	13.8	13.2	5.0	10.8
POTENTIAL REGENERATED HARVEST (sum of shelterwood, seed tree, and clearcutting) Decade 1 ------------------>	5.1	6.9	6.2	3.2	5.0	8.0	7.6	6.2	5.6	4.7
2	5.1	6.2	5.7	4.6	5.1	7.3	7.1	5.9	5.1	5.0
3	5.4	6.4	6.1	6.9	5.3	6.9	8.6	6.1	5.2	5.3
4	6.3	7.1	6.3	8.2	6.5	9.0	6.1	6.2	6.9	6.5
	6.5	7.1	6.1	7.5	6.0	7.4	5.9	6.3	6.7	5.9

TABLE IV-14 (Continued)

Output/Activity	Alternative 11	12	13	14	15	16	17 PA	Departure	Benchmark PNV	MINLVL	TIMBER
	....	....	....	....	Million Board Feet Per Year	....	....	....	....	....	....
TIMBER - POTENTIAL BASE HARVEST Decade 1 -------------->	100	100	100	100	99	71	101	104	103	0 3/	171
2	105	103	102	103	103	82	106	117	102	0	171
3	128	124	121	117	114	94	111	108	130	0	171
4	140	134	131	126	122	108	119	116	151	0	178
5	157	165	164	160	156	124	152	148	183	0	190
10	156	163	161	159	154	132	152	177	158	0	190
15	149	150	149	147	142	132	137	114	97	0	200
	....	....	....	....	Million Cubic Feet Per Year	....	....	....	....	....	....
Decade 1 -------------->	25.0	25.0	25.0	25.0	25.0	17.8	25.7	26.5	25.3	0	42.8
2	25.0	25.0	25.0	25.0	25.0	20.4	25.7	29.0	25.3	0	42.8
3	30.0	28.8	28.2	27.3	26.5	23.5	25.8	25.1	30.3	0	42.8
4	36.0	34.6	33.8	32.7	31.7	27.1	31.0	30.2	36.4	0	44.6
5	38.3	40.3	40.0	39.2	38.1	31.1	37.2	36.2	43.6	0	47.5
10	38.3	40.3	40.0	39.2	38.1	32.9	37.2	43.0	40.0	0	47.5
15	38.3	40.3	40.0	39.2	38.1	32.9	37.2	29.0	25.8	0	50.0
	....	....	....	....	Million Board Feet 2/	....	....	....	....	....	....
LONG-TERM SUSTAINED YIELD	164	164	162	159	154	135	149	138	155	0	201
	....	....	....	....	Million Cubic Feet	....	....	....	....	....	....
	41.0	40.9	40.6	39.8	38.5	33.7	37.2	34.5	38.8	0	50.3
	....	....	....	....	Thousand Acres Per Year	....	....	....	....	....	....
TOTAL POTENTIAL TIMBER HARVEST AREA Decade 1 -------------->	9.9	9.9	9.8	9.8	9.9	5.4	10.2	10.5	7.9	0	26.6
2	8.0	8.5	8.5	8.5	8.4	5.8	8.9	10.7	8.6	0	19.8
3	7.4	7.3	7.2	6.9	6.6	5.1	6.9	6.5	6.7	0	15.2
4	16.5	16.2	16.0	15.7	15.4	8.4	15.6	14.5	10.4	0	16.8
5	13.3	14.2	14.2	14.0	13.5	8.3	13.4	13.0	11.7	0	19.9
10	13.5	17.4	17.2	16.7	15.8	11.6	15.4	17.7	14.9	0	19.3
15	20.4	21.6	20.7	20.4	20.1	16.2	20.3	12.4	14.9	0	33.3
POTENTIAL INTERMEDIATE HARVEST Decade 1 -------------->	2.6	2.7	2.7	2.7	2.9	1.0	2.5	2.6	2.3	0	6.8
2	1.2	1.7	1.7	1.7	1.7	1.3	2.1	3.3	3.3	0	6.4
3	0.5	0.5	0.5	0.4	0.3	0.4	0.3	0.2	0.3	0	3.6
4	9.7	9.2	9.1	9.0	9.0	3.1	9.3	8.5	2.2	0	6.8
5	6.6	7.1	7.1	7.0	6.7	3.0	6.8	6.2	4.4	0	11.9
10	5.7	6.6	6.3	5.9	5.3	5.6	4.6	4.1	7.4	0	9.2
15	13.7	13.8	12.7	12.6	12.6	7.5	12.9	6.1	10.7	0	28.2
POTENTIAL REGENERATED HARVEST (sum of shelterwood, s ed tree, and clearcutting) Decade 1 -------------->	6.4	6.3	6.2	6.2	6.2	4.4	6.6	6.8	5.6	0	17.8
2	5.9	5.9	5.9	5.9	5.9	4.5	5.7	5.9	5.3	0	11.3
3	6.0	5.9	5.8	5.6	5.5	4.7	5.6	5.1	6.4	0	9.6
4	5.9	6.1	6.0	5.8	5.6	5.5	5.3	4.8	8.2	0	7.9
5	5.8	6.2	6.2	6.1	6.0	5.3	5.6	5.1	7.3	0	6.0
10	6.9	9.9	10.0	9.9	9.7	6.0	6.9	9.8	7.5	0	8.1
15	5.8	6.9	7.1	6.9	6.7	8.7	6.3	5.1	4.2	0	3.1

TABLE IV-14 (Continued)

Output/Activity	Alternative 1	2	3	4	5	6	7CD	8	9	10
	Acres									
SUITABLE PRODUCTIVE LAND 4/	673045	775016	715289	736853	651206	779706	721766	720227	578020	612320
NOT SUITABLE PRODUCTIVE LAND 5/	162702	60732	120458	98894	184541	56041	113981	115520	257727	223427
RIPARIAN AREA (suitable)	0	23251	9009	0	0	0	33281	9009	0	0
RIPARIAN AREA (total)	41329	41329	41329	41329	41329	41329	41329	41329	41329	41329
LODGEPOLE PINE HARVEST										
Decade 1	2396	3229	1777	923	2384	326	413	1973	2034	1923
HARVEST VOLUME BY LOGGING SYSTEM	Million Board Feet Per Year									
Decade 1										
Tractor	12.5	17.7	18.3	14.0	13.2	42.4	46.2	18.6	35.0	12.7
Cable	20.3	24.4	21.9	15.6	21.5	38.9	0	21.1	30.1	18.5
1000' Skyline	26.5	39.1	35.4	20.5	28.0	27.9	85.3	38.1	14.8	25.6
2000' Skyline	22.4	34.0	24.3	0.7	18.8	35.3	0	18.6	23.3	21.1
Aerial	0	1.1	1.3	0	0.9	0	0	3.2	0.2	0.8
HARVEST AREA BY LOGGING AREA	Thousand Acres Per Year									
Decade 1										
Tractor	1.0	1.5	2.1	0.9	1.1	2.6	2.8	2.5	2.2	2.0
Cable	1.3	1.5	1.4	0.9	1.3	2.2	T 2/	1.4	1.7	1.2
1000' Skyline	2.6	5.2	3.9	1.3	2.6	1.6	4.8	4.2	1.6	2.3
2000' Skyline	1.6	2.9	1.8	T	1.4	2.0	0	1.5	2.4	1.6
Aerial	T	0.1	0.1	T	0.1	0	0	0.3	0.2	0.1
REFORESTATION AREA										
Decade 1 ------------------->	5.1	6.9	6.2	3.2	5.0	8.0	7.6	6.2	5.6	4.7
2	5.1	6.2	5.7	4.6	5.1	7.3	7.1	5.9	5.1	5.0
3	5.4	6.4	6.1	6.9	5.3	6.9	8.6	6.1	5.2	5.2
4	6.3	7.1	6.3	8.2	6.5	9.0	6.1	6.2	6.9	6.5
5	6.5	7.1	6.1	7.5	6.0	7.4	5.9	6.3	6.7	5.9

TABLE IV-14 (Continued)

Output/Activity	Alternative 11	12	13	14	15	16	17 PA	Departure	Benchmark PNV	MINLVL	TIMBER
						Acres					
SUITABLE PRODUCTIVE LAND 4/	717283	714699	707344	686589	670627	586260	670670	670670	723130	0	835747
NOT SUIT. PRODUCTIVE LAND 5/	118464	121048	128403	149158	165120	249487	165077	165077	112617	0	0
RIPARIAN AREA (suitable)	8966	8966	9009	9009	7454	0	10705	10705	0	0	40919
RIPARIAN AREA (total)	41329	41329	41329	41329	41329	41329	56179	56179	41329	0	41329
LODGEPOLE PINE HARVEST Decade 1	1645	1744	1763	1781	2022	1531	2886	1901	2147	0	3926
HARVEST VOL. BY LOGGING SYSTEM					Million Board Feet Per Year						
Decade 1											
Tractor	21.6	21.3	21.0	20.5	20.0	12.6	21.9	21.9	35.0	0	56.5
Cable	20.4	20.3	20.2	20.1	20.1	17.7	22.6	22.6	30.1	0	11.3
1000' Skyline	37.9	35.9	34.0	33.4	32.8	21.3	35.5	36.2	14.8	0	79.4
2000' Skyline	17.0	18.5	20.0	21.8	23.3	19.5	19.7	20.4	23.3	0	24.1
Aerial	3.2	3.4	3.5	3.6	3.8	T 2/	3.2	4.7	0.2	0	0
HARVEST AREA BY LOGGING AREA					Thousand Acres Per Year						
Decade 1											
Tractor	2.6	2.6	2.6	2.5	2.5	1.4	2.7	2.7	2.2	0	6.2
Cable	1.4	1.4	1.4	1.4	1.4	1.1	1.6	1.6	1.7	0	1.6
1000' Skyline	4.8	4.8	4.7	4.6	4.6	1.3	4.2	4.3	1.6	0	12.3
2000' Skyline	0.7	0.8	0.9	1.0	1.1	1.9	1.5	1.5	2.4	0	4.6
Aerial	0.3	0.3	0.3	0.3	0.3	T	0.3	.4	0.2	0	0
REFORESTATION AREA Decade 1 -------------->	6.4	6.3	6.2	6.2	6.2	4.4	6.6	6.8	5.6	0	17.8
2	5.9	5.9	5.9	5.9	5.9	4.6	5.7	5.9	5.3	0	11.3
3	6.0	5.9	5.8	5.6	5.5	4.7	5.6	5.1	5.9	0	9.6
4	5.9	6.1	5.9	5.8	5.6	5.5	5.3	4.8	6.6	0	7.9
5	5.8	6.2	6.2	6.1	6.0	5.3	5.6	5.1	6.2	0	6.0

[1] Calculated from multiplying cubic feet by 4.

[2] T = Trace

[3] No harvest scheduled - outputs from close out of existing contracts only.

[4] Lands to be involved with regulated harvest during the next 150 years.

[5] Lands which are uneconomical to manage for commercial timber production and lands which are designated to nontimber production in which timber production is incompatible.

TABLE IV-14 (Continued)

					Alternative					
Output/Activity	1	2	3	4	5	6	7 CD	8	9	10
POTENTIAL SELECTION CUTTING					Thousand Acres Per Year					
(Uneven-aged)										
Decade 1 ------------------->	0	2.3	0.9	0	0	0	0.8	0.9	0	0
2	0	2.3	0.9	0	0	0	0.8	0.9	0	0
3	0	2.3	0.9	0	0	0	0.8	0.9	0	0
4	0	2.3	0.9	0	0	0	0.8	0.8	0	0
5	0	2.3	0.9	0	0	0	1.6	0.9	0	0
10	0	2.3	0.9	0	0	0	1.7	0.9	0	0
15	0	2.3	0.9	0	0	0	1.6	0.9	0	0
TIMBER STAND IMPROVEMENT					Acres Per Year					
Decade 1 ------------------->	2470	3980	3261	3770	2710	4199	4543	3613	3477	2691
2	2484	3533	3261	3770	2709	4199	4543	3613	3477	2691
3	5739	8526	6349	5463	6106	8436	7265	6974	7517	6695
4	4795	5976	5311	4508	5031	7237	6586	5282	4985	4937
5	4923	6365	5894	6906	5225	6940	7577	5946	5147	5221
10	7212	8033	6932	7544	6119	7869	5519	6069	4248	6224
15	4592	5851	4240	5829	5011	6850	5171	5722	4731	5760
SITE PREPARATION (slopes over 40%)										
Decade 1 ------------------->	3049	3980	3153	1164	2905	4870	943	3230	N/A	2905
2	2863	3321	2815	2328	2918	4150	3143	2692	N/A	2918
3	3005	3580	3114	4548	2871	3800	4646	3189	N/A	2871
4	755	783	102	1007	56	995	3917	507	N/A	56
5	1620	2298	2444	1810	1638	3838	3317	1841	N/A	1638
PLANTING										
Decade 1 ------------------->	1760	2110	2310	1366	2489	539	8149	2080	1114	2489
2	1456	733	635	733	531	651	13363	958	460	531
3	1084	549	837	4373	442	637	9486	1326	1408	442
4	2193	2742	2371	8263	2425	645	21293	2613	3364	2425
5	2224	1599	707	8636	1888	611	10120	1045	1075	1888
ACTIVITY FUEL TREATMENT										
Decade 1 ------------------->	6504	8915	8310	3233	6467	8358	7714	8872	8017	6247
2	6484	8684	6807	4720	6721	11629	11258	7582	10243	6103
3	6214	8687	6715	10339	6376	7620	8601	6555	6353	5415
4	8950	18105	15095	13794	9295	12649	19132	15409	9104	8024
5	8824	10889	11820	13429	9769	11736	10252	13465	10482	9420
10	12386	15278	12510	14259	13071	16818	12688	16523	11310	13909
15	23802	3004	20403	32625	27014	26095	18876	20317	13788	17275
TIMBER MANAGEMENT EMPHASIS					Thousand Acres					
Moderate and High Intensity	147	326	255	271	226	225	628	276	196	101

TABLE IV-14 (Continued)

Output/Activity	Alternative 11	12	13	14	15	16	17 PA	Departure	Benchmark PNV	MINLVL	TIMBER
	Thousand Acres Per Year										
POTENTIAL SELECTION CUTTING (Uneven-aged)											
Decade 1 -------------->	0.9	0.9	0.9	0.9	0.8	0	1.1	1.1	0	0	2.0
2	0.9	0.9	0.9	0.9	0.8	0	1.1	1.1	0	0	2.0
3	0.9	0.9	0.9	0.9	0.8	0	1.1	1.1	0	0	2.0
4	0.9	0.9	0.9	0.9	0.8	0	1.1	1.1	0	0	2.0
5	0.9	0.9	0.9	0.9	0.8	0	1.1	1.1	0	0	2.0
10	0.9	0.9	0.9	0.9	0.8	0	1.1	1.1	0	0	2.0
15	0.9	0.9	0.9	0.9	0.8	0	1.1	1.1	0	0	2.0
	Acres Per Year										
TIMBER STAND IMPROVEMENT											
Decade 1 -------------->	3602	3594	3586	3463	3408	2244	3405	3406	3317	0	5445
2	3602	3594	3586	3463	3408	2244	3404	3406	3317	0	5445
3	6314	7013	6961	6894	6720	5879	5997	7480	7517	0	20230
4	5264	5295	5292	5307	4985	4432	5110	5842	5260	0	6844
5	5860	5829	5699	5563	5415	4665	5419	5016	6432	0	8997
10	7272	6011	5963	5822	5536	6304	5425	2596	7481	0	8206
15	4678	5768	5533	5139	4630	4315	4601	3976	6167	0	9286
SITE PREPARATION (slopes over 40%)											
Decade 1 -------------->	3230	3230	3230	3230	3230	3049	4536	1436	N/A	0	N/A
2	2692	2692	2692	2692	2692	2863	2151	2727	N/A	0	N/A
3	3189	3189	3189	3189	3189	3005	3134	1751	N/A	0	N/A
4	507	507	507	507	507	755	1467	1118	N/A	0	N/A
5	1841	1841	1841	1841	1841	1620	1809	2361	N/A	0	N/A
PLANTING											
Decade 1 -------------->	2080	2080	2080	2080	2080	1760	2142	2077	1114	0	15299
2	958	958	958	958	958	1456	996	966	460	0	1710
3	1326	1326	1326	1326	1326	1084	1418	1560	1408	0	3171
4	2613	2613	2613	2613	2613	2193	2900	3190	3364	0	400
5	1045	1045	1045	1045	1045	2224	1087	1196	1075	0	400
ACTIVITY FUEL TREATMENT											
Decade 1 -------------->	9800	9826	9863	9882	9834	5361	10208	10480	7882	0	24660
2	7968	8448	8463	8440	8333	5854	8916	10665	8514	0	17704
3	7448	7303	7192	6962	6524	5175	6691	6518	6696	0	13213
4	16585	16197	15979	15690	15300	8567	15587	14488	10296	0	14695
5	13337	14266	14205	14014	13393	8273	13392	12967	11629	0	17817
10	13479	17315	17209	16689	15721	11563	15438	17689	14935	0	17307
15	20409	21623	20714	20422	20053	16217	20341	12433	14884	0	31256
	Thousand Acres										
TIMBER MANAGEMENT EMPHASIS Mod. and High Intensity	227	250	248	225	221	132	219	219	130	0	337

Under all alternatives, the acreage of the Coram Experimental Forest will remain the same. The Intermountain Forest and Range Experiment Station will remain responsible for planning and general supervision of the management program. Flathead National Forest personnel will continue to be responsible for road and trail maintenance, fire management, and law enforcement. Forest personnel will prepare, advertise, award, and administer timber sales within the guidelines determined by the director of the Experimental Station. Timber is classed as unregulated. Firewood cutting is not permitted.

Suitable Acres - The acres suitable for timber production (Figure II-10,) represent the portion of the Forest in which regularly scheduled timber harvest will occur. The alternative with the largest acreage of suitable land has the potential to produce the most timber over the planning horizon. The alternative with the smallest suitable acreage would provide the least timber.

The relatively large suitable acreage of Alternative 6 provides timber benefits that include higher production levels of timber, improved tree age class distribution, timber stand improvement, and other cultural treatments resulting in healthy vigorous stands, reduced tree mortality, and increased wood fiber utilization. The suitable acres of the Preferred Alternative represents the amount needed to maximize net public benefits. The areas in which the reductions in the suitable base from the DEIS were made, are primarily areas which are economically marginal for timber production. After considering public comment, net public benefits were judged to be greater due to the increase in nonpriced benefits as a result of removing from the suitable timber base, prime grizzly habitat and some steep marginal timberlands. About 14,000 acres of the suitable base decrease results from an increase of unsuitable riparian area in order to correct calculation errors estimating riparian area in the DEIS.

Management Intensity - The intensity of timber management applied to a given area is a function of the economic efficiency analysis conducted by the FORPLAN computer model. Management activities are scheduled over time and applied to a given stand of timber so that the monetary investment maximizes the returns in timber volume and value within the projected 150-year planning horizon. Three intensities of management are considered.

Low intensity timber management would provide the volume produced by an unmanaged stand. The economic analysis indicates that for some stands of a certain age at a specific decade in the planning horizon, additional investments in management activities do not increase priced benefits. Only a final harvest is scheduled.

Moderate intensity management schedules one precommercial thinning and one intermediate harvest prior to the final harvest to increase the volume and value of the "crop" trees.

High intensity timber management schedules one precommercial thinning and two intermediate harvests prior to the final harvest.*

The intensity of timber management can change over time, between the management of the existing stand and the future (regenerated) stand. Higher management intensities require higher levels of funding. In most cases, regenerated stands will be managed at moderate or high intensities under all alternatives.** Intensities displayed for land designations for the first decade, are displayed in Table II-19.

Silvicultural Systems - Three silvicultural methods for regeneration harvest of timber are appropriate for the Flathead Forest: clearcutting (which includes seed tree cutting), shelterwood, and selection/group selection. The acres harvested under these methods are shown in Table IV-9. Differences among alternatives are due to cost-efficient scheduling to meet the various timber harvest objectives for each alternative.

In most cases, even-aged silviculture (clearcut and shelterwood) will be practiced to achieve the management, social, and biological objectives of the alternatives. Uneven-aged silviculture will be used primarily in riparian areas and other special areas such as those where retention of the current landscape is the visual quality objective. The silvicultural system designed for each management prescription considers landtype and habitat types, tree species, and timber condition class.***

Uneven-aged silviculture is applied on relatively small, high value areas because widespread long-term application is incompatible with the natural even-aged vegetative communities of the Flathead National Forest (Habeck and Mutch, 1973; USDA, Agriculture Handbook 445, 1983).

The current stand age classes lend themselves well to even-aged management, and relatively few stands currently exist with age structures that are suitable for uneven-aged silviculture (Hahn and Bare, 1979, and Davis, et. al, 1980). Application of uneven-aged silviculture to even-aged stands in the habitat types that comprise most of the Flathead National Forest's timberlands will result in a loss of tree species diversity (Boyd, 1979). Seral species such as western larch, lodgepole pine, spruce, and western white pine require sunlight and mineral soil seedbeds to reproduce. Under even-aged management, these economically

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* Detailed documentation of the management regimes and their associated projections of timber yield and activity costs is available in the planning records.

** Current Direction manages almost all stands at moderate or high intensities, including mature sawtimber old growth. The intensities applied to these age classes do not increase timber volumes or stumpage values. They do, however, increase management costs.

*** For further information see, "The Rules for Assigning Management Prescriptions to Analysis Areas," and "Habitat Type Guidelines," Flathead Forest planning records.